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DIFFUSIONAL CUMULATION AND ARCHAIC RESIDUE AS HISTORICAL EXPLANATIONS

MORRIS SWADESH

IF TWO CULTURES have traits in common to an extent that cannot be explained by sheer coincidence, a historic basis must be assumed. There are two principal possibilities. The sum of common traits may be the cumulative result of a long series of separate borrowings, or they may be all that is left of a once extensive complex anciently shared by forerunners of the two cultures. The problem of distinguishing between the two types of cases is important for every aspect of culture history but for certain reasons is most clear-cut with reference to language, where it has been formulated as the question of diffusion versus common origin. The classic controversy on this subject between Franz Boas and Edward Sapir[1] resulted in considerable clarification of the main problem, even though there was a limited area in which these two scholars never agreed. The present paper attempts to resolve or to narrow the moot point, and to develop the general theoretical implications of the problem. This is done by reëxamining the main arguments of Boas and Sapir and by experimenting with the use of objective tests for distinguishing diffusional cumulation from archaic residue. We discuss linguistic phenomena primarily, but attempt to see them in the perspective of the general cultural problem.

I

Language is a cultural complex. It has its special characteristics, of course, but it is nonetheless a body of customary forms transmitted from generation to

1 See particularly Franz Boas, *The Classification of American Languages* (American Anthropologist, vol. 22, pp. 367-376, 1920) and *General Anthropology* (New York, 1938), pp. 135-138; Edward Sapir, *Language* (New York, 1925), pp. 205-220.

generation and from society to society in the same way as other cultural forms. Both Boas and Sapir recognized this, as shown, for instance, in the following quotations.

> Speech is a human activity that varies without assignable limit as we pass from social group to social group, because it is a purely historical heritage of the group, the product of a long-continued social usage.[2]

> Thus it appears that language has behaved in the same way as all other cultural traits. . . .[3]

Now, since language behaves in the same general way as other aspects of culture, it is interesting that the problem of common origin versus diffusion has been raised only in connection with language. There seems to be two reasons for this. First, the special characteristics of language make the problem more apparent. And second, the question has been inaccurately formulated in such a way as to obscure its general application.

The crucial fact that distinguishes language among cultural forms is suggested by Sapir in the following words:

> Language is probably the most self-contained, the most massively resistant of all social phenomena. It is easier to kill it off than to disintegrate its individual form.[4]

As these remarks indicate, language is different in degree, not in kind, with reference to a quality which Sapir describes as being "self-contained" and which results in strong resistance to structural change. Societies have been known under special circumstances to drop the use of traditional languages and to adopt new languages. Examples are the tribes of Gaul and Iberia which took over Latin, or the American Indian groups which now use English, Spanish, or Portuguese. In this process, it sometimes happens that the new language is modified in the direction of the old language. However, more often than not the effect of the old language on pronunciation, vocabulary, and phraseology is eventually ironed out.

Why is language so self-contained? For one thing, languages are large highly organized systems, involving hundreds or thousands of conventional symbols (words or morphemes) which are combined in conventional sequences (sentences, phrases, complex or compound words). Secondly, language is an archaic human invention probably developed concommitantly with the earliest definitely human society. As far back as history and prehistoric reconstruction permit us to pene-

2 Sapir, *Language*, p. 2.
3 Boas, *General Anthropology*, p. 140.
4 Sapir, *Language*, p. 220.

trate, we find fully developed languages comparable with those existing today. Thirdly, the communicative function of language is possible only on the basis of a body of conventions that is preponderantly stable. By its nature, elemental communication is largely neutral to social upheaval. An advanced technology, a new economic system, or a more complex social organization will generally be reflected in a changed and enlarged vocabulary but without necessary changes in the phonetics or structure of the language or in the basic vocabulary.

These are the facts that make languages more resistant to radical changes than other social phenomena. However, it must be emphasized that the difference is not an absolute one. Other complex patterned social forms also admit superficial modifications more readily than fundamental change.

II

A general examination of the main processes of culture history will prove helpful in clarifying our problem.

Diffusion is the spread of culture traits or complexes from one group to another. A contrasting process is tradition, whereby culture is handed down from generation to generation.

The life of every cultural feature is accompanied by fluctuation and change, which sometimes proceed so slowly as to be imperceptible but in principle are constantly going on. Changes are especially apt to take place in the process of diffusion. The borrowing culture often sluffs off or replaces traits in a borrowed complex. Frequently the borrowing culture takes over single traits, incorporating them into native complexes. A society, usually over a period of generations, may take on a new language and let its original language fall into disuse. Or it may incorporate into the native speech one or more individual vocabulary elements or even a phonetic or morphological feature from a neighboring language. In general separate traits are borrowed more readily than complexes; subordinate patterns within a larger complex are more readily diffused in inverse proportion to their complexity. Of the component traits, some are bound into the entire system in particularly intimate fashion and are consequently less likely to pass from one culture to another independent of the complex.

While diffusion carries culture from one society to another, societies themselves experience considerable flux, marked by growth or diminution of population and by splitting up or coalescence with other groups. The growth of a group may involve territorial changes, either in the form of gradual expansion or contraction of the area or by relatively abrupt migrations of portions of the group to new areas. As long as conditions of close internal communication prevail in the society,

the culture tends to remain uniform throughout; changes appearing in one part of the area either spread quickly through the whole territory or are dropped because of the cultural influence of the bulk of the society. Where the size of the territory or other circumstances prevent the fullest internal contact of the group, there is a tendency to develop local variations of the culture which may eventually amount to major differences.

The processes of gradual change and regional differentiation and the interweaving effect of migration and diffusion can be clearly observed in connection with language. For example, Latin, having spread through Italy, Iberia, Gaul, and Dacia, developed local dialects which eventually differentiated into Italian, Spanish, French, Rumanian, and other Romanic languages. These tongues are of common origin because they all started out as variations of a single original language. Their development involved the full gamut of historical processes: migration, development of regional differences, diffusion of the whole complex to new populations, diffusional borrowing of separate elements from different neighboring languages.

The processes shown here affecting language operate in essentially the same way with regard to other culture complexes. While Latin was spreading and differentiating, many features of Roman industry, ceremonialism, art, government, and economy were carried by migration and diffusion and went through local changes comparable to what took place in language. In this way, non-linguistic culture patterns now found in France, Spain, Italy, and Rumania are of common origin. However, the other complexes did not necessarily show the same limits of diffusion as the Latin language; they generally went much farther. Wine culture, military organization, and the alphabet are especially good examples of Mediterranean culture features that traveled much farther than the Latin language. Many individual features of the language, particularly vocabulary, also went much farther.

It is clear that diffusion and common origin are not opposites. Instead, the former refers to the process of conveyance and the latter to the source. Diffusion along with migration accounts for the occurrence in different places of complexes having a single origin. In a strict sense, therefore, there is no such thing as a problem of diffusion versus common origin either in language or in any other aspect of culture. The question which occupied Boas and Sapir was actually not diffusion versus common origin but diffusional cumulation versus archaic residue.

III

The theoretical differences between Boas and Sapir on the subject of language history were not as great as is sometimes supposed. It is not by any means that the one believed in diffusion and the other did not. On the contrary both were keen students of diffusion both as a general cultural phenomenon and in its application to language. Nor must one imagine that Boas did not accept the concept of common origin of groups of languages. The question rather turned on the extent to which science can trace groups of languages back to such prototypes. Boas' notion is simply that deceptive cases can arise as a cumulative result of the diffusion process, so that in some instances he considered it impossible to be certain that a group of languages has or has not a common origin. Sapir, on the other hand, is convinced that a careful examination of the evidence will definitely establish the prehistory of the supposedly ambiguous cases.

Here is Boas' statement of the problem:

> . . . the whole theory of an "Ursprache" for every group of modern languages, must be held in abeyance until we can prove that these languages go back to a single stock and that they have not originated, to a large extent, by the process of acculturation.
>
> From this point of view I should not be inclined to claim, for instance, that Tlingit and Athabascan are members of the same linguistic family. There is not the slightest doubt that the morphology of the two groups shows the most far-reaching similarities. Since, furthermore, the two languages are contiguous, the inference is inevitable that these similarities must be due to historical causes. It is, however, another question whether we are to infer immediately that these differences [read *similarities*] are due to the fact that in very early times the two groups had a common "Ursprache." The vocabularies of Tlingit and Athabascan are fundamentally distinct, and it does not seem to me that Dr. Sapir has proved his case of relationship between the two languages by the comparison of a limited number of words that show slight phonetic similarities. The question would remain to be answered, why there should be such fundamental dissimilarities between by far the greater number of words, and the question should still be asked how these dissimilarities are to be explained.[5]

Sapir's answer is as follows:

> . . . The theory of "borrowing" seems totally inadequate to explain those fundamental features of structure, hidden away in the very core of the linguistic complex, that have been pointed out as common, say, to Semitic and Hamitic, to the various Soudanese languages, to Malayo-Polynesian and Mon-Khmer and Munda, to Athabascan and Tlingit and Haida.

5 Boas, *The Classification of American Languages*, pp. 374-375.

. . . certain languages have, in all probability, taken on structural features owing to the influence of neighboring languages. An examination of such cases, however, almost invariably reveals the significant fact that they are but superficial additions on the morphological kernal of the language. So long as such direct historical testimony as we have gives us no really convincing examples of profound morphological influence by diffusion, we shall do well not to put too much reliance in diffusion theories. On the whole, therefore, we shall ascribe the major concordances and divergences in linguistic form—phonetic pattern and morphology—to the autonomous drift of language, not to the complicating effect of single, diffused features that cluster now this way, now that.[6]

Boas years later, in 1939, restates his position in very reserved fashion:

It follows from all this that for many distantly related languages the history of which is unknown, a categorical answer in regard to their genetic relationship cannot be given. In many cases historical relation must be assumed, but whether we are dealing with mixture of languages or with divergent branches of an ancient stock will remain doubtful.[7]

Thus, Boas limits the problem to certain cases of "distantly related languages," and insists that in some of these cases one cannot know with certainty whether one is dealing with a residue of similarities from a single earlier language or an accumulation of common features through borrowing of single traits. Sapir maintains the possibility of distinguishing the "morphological kernel" of a language from "superficial additions." Basing himself on documented cases ("direct historical testimony") he holds that no accumulation of features of the kind that may be diffused singly is likely to add up to the appearance of an essential core of morphological features.

Stated in this fashion, it is easy to see that the problem of accumulation versus residue in language is not unlike familiar problems in other branches of culture. For example, myths belonging to two cultures are compared. It is found that myth A of one culture has a number of points in common with myth X in the other culture. Are we dealing with the same original myth which has diverged in two directions until only the given number of common details remain, or have these details recently been incorporated into originally distinct myths? Normally such a problem can be easily solved on the basis of internal evidence. Do ambiguous cases occur? Folklorists may attempt to answer this question on the basis of their experience. In the present paper we attempt a definitive answer with reference to language. We do not know to what extent the answer holds for industrial

6 Sapir, *Language*, p. 219.
7 Boas, *General Anthropology*, p. 139.

complexes, ceremonial forms, art, social organization, and so forth, but we are satisfied that the general facts have a great deal in common with language. Perhaps, also, our approach to the problem may suggest something of interest for the other aspects of culture.

IV

Sapir singles out morphology as the most fundamental component of language and among morphological features he points out that some are relatively superficial while others enter into the "morphological kernel" of the language. This gives the key to the problem of accumulation and residue. The inference is that the sharing of superficial features may reflect single-trait borrowing while the sharing of fundamental features, particularly if a number of them go together, demonstrates common origin. The validity of this criterion can be tested by examining various controlled cases, where we have a relatively complete developmental record of known end-products. Such knowledge may come from written samples of the languages from a succession of periods or from a detailed reconstruction made by systematic comparison of several related languages.

A convenient as well as very adequate test for our purposes is provided in the two-fold relation existing between English and French, which involves both ancient common origin and long recent contact. Systematic comparison and detailed reconstruction have demonstrated beyond doubt that a whole series of languages of the ancient world, including Latin and Teutonic, were divergent developments from an earlier single language, known as primitive Indo-European. The period of common Indo-European—when its divergent forms presumably did not constitute more than local dialects—may have been about 5000 years ago. Present-day French is a modern continuation of Latin. English as we know it today is the modern form of Anglo-Saxon, belonging to the Teutonic group. Thus French and English are the end-products of two lines of divergent development from a common origin and have had perhaps 5000 years in which to develop their present divergent characteristics. In the last 2000 years these two historical streams have been in contact under conditions very favorable for diffusion. A striking measure of the close contact of the two languages is the fact that about half of the English vocabulary corresponds with French on the basis of recent borrowings. This includes loans from French at different stages of its history, from Latin down to the modern speech; elements possessed in common with French because the latter has borrowed from English or from older forms of Teutonic; and words which both languages have from some source, including classical written Latin and Greek, and a miscellaneous variety of modern lan-

guages (Italian, Arabic, American Indian, African, etc.). However, it may not be assumed that structural borrowings have been as extensive as those in the vocabulary, and it is the structural relationships we must now examine.

The historic data of the recent centuries shows progressive gradual loss of residual common features of morphology. For example, in the earliest records both historic lines, that is Latin and Anglo-Saxon, have nouns inflected for case by means of suffixes; there are analogies in the usage of the cases and even a few similarities of endings. In recent centuries French has lost its case endings entirely and English preserves only the genitive. Noun plural formations are maintained in English but are vestigial in French, occurring only in phrase "liaison." French preserves the person distinctions in the verbal endings of the plural while English has lost them in the plural. Thus we see in process the slow changes which have been reducing the inventory of residual common features. On the other hand we find some new common features acquired by diffusional influence. We can therefore pose the test question: How does the inventory of common residual features compare with the present accumulation of traits acquired by diffusion? We present for consideration lists of typical features in each category. As will be recognized, the lists are intended to be representative rather than complete.

Features of modern English and French which go back to their ancient common form, that is Indo-European, include such traits as the following:

1. Separate noun and verb inflection. Verb-stems in some instances identical with noun-stems.

2. Inflectional categories of singular and plural number; past and present tenses (perhaps based on an original aspect system); past and present participles. Inflection shown by endings. The actual formatives show phonetic similarities in some instances.

3. Substantival rather than verbal-type adjectives. This contrasts with Chinese and many other languages, even though it is not exclusively Indo-European.

4. Adjectival forms of pronouns, e. g., *we–our, nous–nôtre.*

5. Inflectional irregularities including the first person pronoun (*I–me, je–moi*) and the use of two stems in the predicative verb (*is–be, est–fus*), though the places where each stem is used agree only in part.

6. Relational and local prepositions. The same elements also used in association with verbs in directional or derived senses, e. g., *in-come, en-tendre.*

Common structural features of French and English which reflect diffusional influences of recent centuries include:

1. Use of definite and indefinite articles developed in Teutonic and Romanic languages out of demonstratives and the unitary numeral; the articles are pre-

posed in most languages of both groups but are postposed in Scandinavian and Rumanian. Historic evidence suggests that Latin may have led the way in this development, with Teutonic influenced by it, even though the actual forms are developed out of native elements in each language group.

2. Genitive relation shown by preposition (English *of*, French *de*), universal in Romanic, restricted in English.

3. A few freely used affixes in English, including *re-* as in *re-do*, *ex-* as in *ex-fighter*, *-able* as in *lovable*. Borrowed from French.

4. Bound prefixes used only with stems of Latin origin, as in *extract–retract–subtract–contract–distract–protract*. English has adopted these elements in their characteristic combinations partly from French but mainly from the learned use of Latin.

5. Formative suffixes added, with consonant changes, to non-independent stem-forms in such series as *electric–electricity–electrify–electrification* or *delicate–delicious–delicacy*. In French this process belongs partly, in English largely, to the field of learned late borrowings from classic Italian and Greek.

6. Limited instances of untypical word order with modifier second in such names as *Cafe Boston* (instead of *Boston Cafe*) in English or with modifier first in French as in the newspaper name *Paris Express* (instead of *Express de Paris*).

If nothing were known of the history of two languages and they were found to have in common only such features as are given in our second list, would one have any doubts as to whether these were residual or cumulative similarities? Obviously not. The similarities in word order are very limited and obviously represent exotic rather than normal usage. The bound prefixes and suffixes are mostly used with learned or refined vocabulary, and generally exist side by side with more everyday elements; for example, *ex-* in *extract* serves the same function as *out* in *to pull out* and the latter is the simple every-day equivalent of the former; similarly *shiny* is the down-to-earth equivalent of *lustrous*. The prepositional genitive in English shares the function of the suffixal form, and the latter corresponds to the irregularly made pronominal forms (*his, her, my, our, your*). Of the two genitives, therefore, the prepositional is the less archaic; only if the suffixal genitive went entirely out of use might the resemblance to French be suspected of being residual. The freely used affixes (*re-, ex-, -able*) cannot be taken for residual correspondences with French because their forms coincide too closely with the latter; if they were residual after a long period of separate development their phonetic forms would have diverged considerably more. Only one feature, the use of articles, could possibly be regarded as pointing toward common origin. But, standing alone, it would have no force. It is not the kind of feature

that might be expected to persist longer than any other over a period of time sufficient to remove all other vestiges. Moreover, it is a simple enough trait to be taken over under diffusional influence.

We have seen that residual common traits after some 5000 years still constitute an impressive array. The number is not so great, but their relation to the languages is intimate. And they involve formational irregularities that could hardly come over with borrowed words. But what would happen after a much longer time? Suppose twelve or twenty-four thousand years had elapsed since the common history of the two languages. Would not the structural similarities become less and less in number and more and more attenuated in form until they are reduced to perhaps only one recognizable but very vague similarity? In this case, would the situation be indistinguishable from one in which a single trait had been taken over by borrowing? Not necessarily. If the last vestigial similarity involved a deep-seated coincidence in formation, such as that between English *I–me* and French *je–moi*, then even one common feature would be strongly suggestive of common origin rather than borrowing. If the common feature were more superficial, say like the use of preposed articles, it could just as easily be a borrowed feature. However, it could also constitute a chance coincidence with no necessary historical relationship at all. It therefore can be concluded that in any instance where morphological similarities between two languages force the conclusion that they have some kind of historical connection, there should be no difficulty in determining whether that connection is residual from a common origin or cumulative from a series of borrowings.

We can test this conclusion on the case which Boas regarded as probably unresolvable, the relationship between Tlingit and Athabaskan. To do so we list the structural similarities as noted by Sapir:[8]

1. Frequent stem form CV(C), that is consonant followed by vowel and perhaps by another consonant. Tlingit also has CVCC. Comparison with Haida seems to indicate that the initial consonant is in some instances reduced from a consonant cluster, particularly groups beginning in *s* and *ɬ*.

2. Absence of reduplication. A negative feature but a striking one among languages of the Northwest Coast, where reduplication is typical.

3. Noun and verb distinct, but some stems function as both.

4. Very little affixing on nouns. Possessive prefixes, largely identical with object prefixes of the verb. Suffixes include plural of humans and a diminutive.

5. Noun plus noun compounds, with a qualifying element first.

8 Edward Sapir, *The Na-dene Languages, a Preliminary Report* (American Anthropologist, vol. 17, pp. 534-558, 1915).

6. Verb complex involves a single verb stem, at or near the end. Prefixes for pronominal object and subject, mode, adverbial elements of instrument, direction, place. Adverbial prefixes often identical with or related to nouns.

7. A few temporal-modal and aspectival suffixes used with verbs.

8. Postpositions used with pronominal prefixes and with nouns in the manner of second-position elements in compounds. Postpositions often identical with nouns, e.g., Tlingit *wan* meaning "edge" or "around," Athabaskan *man* meaning "edge" or "close to." Some postpositions also used with verbs.

9. Use of relative suffix (Tlingit *-yi*, Athabaskan *-ye*) with verbs. Identical element also added to nouns when used with pronominal prefix in possessive usage, except for relationship terms and most body parts.

The foregoing list of common structural features bears out Boas' statements that "There is not the slightest doubt that the morphology of the two groups shows the most far-reaching similarities" and further that "the inference is inevitable that these similarities must be due to historical causes."[9] However, in the light of our control case, we no longer need have any doubts as to the kind of historical causes which gave rise to this array of structural similarities. It is clearly of the same general order as that shown by the residual similarities of English and French. In fact, Tlingit and Athabaskan show a distinctly closer structural affinity than English and French. With this as a basis of comparison we see that it would be fantastic to imagine such a body of fundamental structural affinities coming about by a series of borrowings.

Similar to our use of a control case is Truman Michelson's pointed observation:[10]

> Thus Athapascan, so far as we know, has been in just as intimate contact for a very long period with Salishan and Esquimauan as with Tlingit; but there is not the slightest resemblance structurally between Athapascan, Salishan and Esquimauan.

Salishan and Eskimo thus confirm Sapir's thesis, even though we know little about their past history. The relation of French and English is both well documented and convenient for the purposes of illustration. However, several other control cases might have been taken, such as the influence of Chinese on Japanese, of Arabic on Persian, of Indic on Burmese or Malay, of Latin on Albanian, of Greek on Russian, etc. Any of these cases would give essentially the same general results as those we have seen.

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9 Boas, *The Classification of American Languages*, p. 374.

10 Truman Michelson, *The Classification of American Languages* (American Anthropologist, vol. 23, pp. 236-237, 1921), p. 236.

V

In his treatment of "How languages influence each other,"[11] Sapir discusses the borrowing of words at some length but does not mention the possibility of using vocabulary as a criterion of residual and cumulative relationships. However, as is reflected in Sapir's discussion and as is well known, there is a gamut of probability in word borrowings. And this fact can be very effectively used in studying relationships. Properly handled, vocabulary becomes a highly reliable criterion, just as reliable in fact as morphology, and it has the special advantage that it can be converted into percentages with consequent advantages in objectivity. The chief significance of employing vocabulary as a measure of relationship is that it affords an additional separate test, capable of verifying the results of the morphological criterion.

The use of vocabulary in historical studies is based on the same general principle as that used in morphology, namely that some elements are more fundamental and therefore more stable than others. The stability of words is related not only to the structure of the language but also to their place in the life of the people using the language. Culture words are borrowed readily, basic words much more rarely. Though this fact is generally recognized, the degree of difference objectively measured may prove surprising. We can take the same control languages we used for morphology.

There are few languages that have borrowed so liberally as has English. The bulk of the borrowings has been from Romanic, both through spoken Latin and French and through learned borrowings from the written tradition of Latin. English has also taken vocabulary from classical Greek, from Arabic, American Indian, African, and many other languages. On the other hand, the Romanic languages have received many vocabulary influences from Teutonic in the old days and from English in modern times. And they have shared in cultural terms (e.g., *café, coffee*) which English has from exotic tongues. As a result of these factors, about half of the general English vocabulary coincides with French on the level of borrowing, either of one language from the other or of both from a common source. Against this large percentage of borrowings in the general vocabulary, loans in the basic vocabulary are all but negligible.

In order to obtain an index of diffusional influence on the basic vocabulary, we have used a list consisting of 215 items empirically chosen for their relatively stable character. The test list, designed as a general measure of affinity between

11 Sapir, *Language*, chapter 9, pp. 205-220.

related languages,[12] is not fully satisfactory in its selection of stable items, but will serve our purposes. The procedure in using any such technique has to be standardized so that one may always get approximately the same results from the same material. We have operated as follows. Each item is expressed in English and a series of notes narrows the meaning in the event of ambiguity; for example, "know" is understood to refer to facts rather than persons, so that the French equivalent is *savior* not *connaître*. For each item we enter the most common simple form used in the given language, avoiding the complication of having to deal with a choice of words. After the lists are filled in for two languages, one compares them for correspondences and non-correspondences. For the present study, the correspondences are marked either residual or borrowed as the case may be. A correspondence is an instance in which the compared elements derive, in whole or in part, from a common prototype; affixes and composite elements are disregarded, e.g., French *avoir peur* is considered to correspond with English *to fear* despite the difference of formation. Phonetic changes have to be taken into account in terms of the regular developments known to have taken place, based on historically recorded facts or the best available reconstructions. We confine ourselves to the words entered for each item, disregarding correspondences which do not fit the meaning; for example, French *uns* and English *some* must be counted a non-correspondence even though another English word, *ones*, is related to the French word.

The results of the test are dramatic. As against perhaps 50 percent of borrowed correspondences between English and French in the general vocabulary, we find just 6 percent in the basic vocabulary. Residual correspondences are found to be 27 percent. Thus the archaic residuum after 5000 years turns out to be five times greater than 2000 years of accumulated borrowings. Similar results are found between German and French, except that the borrowings are only 3 percent. The residual relations between German and English, with only about 2000 years of independent development, are much closer than those between French and English. Here are the comparative figures:

	Borrowed	*Residual*	*Unrelated*
English and German	2%	60%	38%
English and French	6%	27%	67%
French and German	3%	29%	68%

12 Morris Swadesh, *Salish Internal Relationships* (International Journal of American Linguistics, vol. 16, pp. 157-167, 1950).

If suitable dictionaries were available it would be a simple matter to measure basic vocabulary correspondences among the Nadene languages in order to compare the results with English-German-French. In the absence of adequate dictionaries we can make shift with the comparative vocabulary which Pliny Earle Goddard gives in his attempt to disprove the relationship of Tlingit and Athabaskan.[13] Goddard includes all the items for which he had available both a Tlingit form and an Athabaskan form, taken from Hupa, Kato, Chasta Costa, Chipewyan, Jicarilla, or Navaho. Since his list is intended to be as complete as he could make it, giving whatever forms it was "possible to match," and was not chosen to exaggerate the similarities of Tlingit and Athabaskan, we can take it to be representative and unbiased for our purposes. From his comparisons we take all items which coincide with our test list, amounting to 82. Of these, 36 show phonetic correspondence suggestive of common origin. This amounts to 44 percent. Even allowing a liberal margin for errors in determining the correspondences and for chance resemblances, this figure is far too high to be explained by accumulation of borrowings. More than that, it is clearly within the range of residual correspondences found in our examination of German, English, and French, exceeding the 27-29 percent residuum found persisting after 5000 years, but less than the 60 percent persisting between English and German after 2000 years of separate development. The inference is that Tlingit and Athabaskan have diverged from a single language, and that they separated more than 2000 and less than 5000 years ago. This conclusion corroborates what is indicated by the morphological criterion.

VI

Diffusional cumulation of basic vocabulary is counteracted by the universal trend of gradual vocabulary displacement. That is, once foreign words are brought into the basic vocabulary of a language they are subject to being subsequently displaced in the same way as all other vocabulary elements. As a result only a small fraction of the basic vocabulary can ever be loanwords. It is possible to calculate the approximate size of this fraction.

The study of basic vocabulary change as a phenomenon of culture history

13 Pliny Earle Goddard, *Has Tlingit a Genetic Relation to Athapascan?* (International Journal of American Linguistics, vol. 1, pp. 266-279, 1920). The thirty-six items in Goddard's list which coincide with our test list and which show similarity consistent with historic connection are: brother, tooth, offspring, trail, night, heart, stone, feather, name, rain, bone, bird, head, song, cloud, ear, hair, husband, mother, fly, sleep, count, shoot, push, old, hunt, kill, think, drink, tell, burn, large, dark, look, sit, deep.

has barely begun,[14] but there are already indications that the rate of change is not indefinitely variable. Since the test vocabulary has not yet been perfected and some problems of statistical technique have not been standardized, there is little point in presenting a detailed report of the results to date. Instead we note that the figures we have cited for English, German and French are fairly typical of other languages with reference to the rate of basic vocabulary change they indicate. For present purposes we may operate simply with these figures.

The percentage of change in successive time periods applies to the vocabulary at the beginning of each period, not to the original common vocabulary. Our comparison of English and German shows that 40 percent of the original common basic vocabulary has been displaced in one or the other or both languages in 2000 years. If the same percentage of the original vocabulary were affected in subsequent time periods, then in 5000 years two diverging forms of an original language would no longer have any common basic vocabulary. But this does not happen. If 60 percent of the original basic vocabulary is still held in common after 2000 years, then after a second like period there remains 60 percent of those 60 percent, that is 36 percent. To obtain the percentage after an additional 1000 years, making 5000 in all, one must multiply 36 percent by the square root of 60 percent. The calculated percentage is then 28 percent.[14a] Since the actual percentage for English-French is 27 percent and for German-French 29 percent after

14 Highest basic vocabulary retention found so far is at the rate of 90% after 1000 years in Maltese Arabic compared with classical Arabic, as counted by Joseph Greenberg using the same test list as we did. Lowest retention is at the rate of 76% after 1000 years in modern Roumanian compared with classical Latin, as counted by Ephraim Cross using a somewhat different test list. Other counts fell between these two extremes. We may tentatively designate the rate of retention as 83% $\pm$ 7%. However, it is not yet clear to what extent the indicated range is due to real variations in the material and to what extent to differences in counting techniques. Cross' count is now being published in *Spanish-Portuguese Correspondences in the Framework of the Romance Languages* (Proceedings, International Colloquium on Luso-Brazilian Studies, Vanderbilt University, Nashville).

14a In calculating what is to be expected theoretically with reference to vocabulary, it is far simpler to operate directly in terms of residue rather than first figuring the loss and then subtracting. The arithmetic of determining expected residue then consists simply of taking percentages of percentage or, in more mathematical phraseology, raising a percentage to a higher power. If one knows the percent retained after 2000 years and wants the percentage that one would expect to be retained after 1000 years, one has to seek a percent that multiplied by itself will give what one actually has for 2000 years or, mathematically speaking, one takes the square root of the 2000-year residue. In our example, r for 2000 years is 60 percent, and the square root of 0.60 is 0.774. This implies that, if the rate of resistance to change was constant in the two halves of the 2000-year period, then 77.4 percent must have been retained after the first 1000 years; after the second thousand years 77.4 percent of that 77.4 percent, amounting to 60 percent, was still retained.

approximately 5000 years, we have here a corroboration of the general correctness of this approach.

Applying this rate of retention to the maximum rate of borrowing, we can determine the maximum percentage of diffusional cumulation in the basic vocabulary. There is small likelihood in culture history that conditions favoring maximum borrowing of vocabulary will persist indefinitely over thousands and thousands of years. Nevertheless, for the purpose of calculating a statistical limit, let us proceed on the assumption that in successive periods of 2000 years 6 percent loan correspondences appear between two languages. During the second such period, while 6 percent of new borrowed correspondences are accumulating, the first 6 percent reduces to 60 percent of itself or 3.6 percent. This gives a total of 9.6 percent at the end of the second 2000 year period. For the third period we take 60 per cent of 9.6 percent and add 6 percent. Continuing thus, the total would reach 15 percent in 12,000 years, after which the total would increase no further, because the rate of loss would just equal the maximum rate of cumulation.

To accumulate 44 percent of common elements through borrowing is thus utterly out of the question. Even reaching 15 percent of borrowed correspondence is so remote a possibility as to be negligible, since it could come about only if the same two languages continue to exist side by side under the most favorable kind of culture contact for a tremendous span of time. It would assume that no migrations separate the two languages, that neither of them displaces the other in all this time and that neither gives way to a third language.

By recognizing the diagnostic significance of basic vocabulary, we reduce almost to the vanishing point the uncertainty which Boas saw in the problem of diffusional cumulation versus archaic residue. Tlingit-Athabaskan, which he felt epitomized the problem, is found to be completely removed from the category of doubtful cases. It is conceivable that the area of uncertainty reappears at a much greater time-depth, but even this possibility must not be taken for granted. We must look into it further. However, it is worthwhile to first examine some questions of stable vocabulary and of phonetic change.

VII

A few points regarding stable vocabulary need to be clarified.

We have presented a mathematical test of the common origin of languages based upon the use of an empiric basic vocabulary. But we do not claim that only this particular list may be used for such a purpose, nor can we hold that the proof has to be narrowly statistical. Normally any substantial array of correspondences among stable vocabulary elements constitutes adequate proof of

genetic relationship. By this token, Sapir's demonstration of the Nadene stock was fully successful. He listed ninety-eight comparisons of structural morphemes and basic vocabulary in at least two of the three branches of the new stock—Tlingit, Athabaskan, and Haida. Not more than one or two of his comparisons can be considered to be of doubtful stability. Therefore, Harry Hoijer gives undue weight to illusory counterarguments when he says:

> The complete evidence for this classification is not yet available. It has, however, been attacked by Boas and Goddard, who point out that the similarities listed by Sapir as evidence of genetic relationship may have resulted from borrowing.[15]

Hoijer's reservations are unjustified because, as we have seen, it would be impossible for such a substantial number of correspondences among stable vocabulary items to accumulate through borrowing.

It is understood that stability, whether of basic vocabulary or of formative elements, means relative and not absolute stability. Pronouns, for example, can and do change. English and German pronouns do not agree at all point. English and French have only their first-person singular in common. Tlingit and Athabaskan show less correspondence than English and German but more than English and French. Athabaskan and Haida are almost completely unrelated in their pronouns. However, Mattole *ya-* "third person plural prefix, meaning 'all'" may be residually related to Haida *ga* "they (indef.)"[16] and other relationships may appear when the phonology of the Nadene languages is better known. In any event, the small number of personal pronoun elements demonstrably comparable between Haida and Athabaskan may prove that Haida is more distantly connected than Tlingit but does not destroy the case for including Haida in the Nadene stock.

In the Indo-European languages, the numerals from one to ten show remarkable stability. From this, we may conclude that counting had developed into a very fixed form in common Indo-European. But we cannot conclude that all stocks must show the same stability in their numbers. Many tongues have only five primary numbers, with the remainder built on these. Some have only four, and the word for "four" may be built on the word for "two." This seems to be the case in Tlingit and Haida. The word for "five" in all three branches seems to be related to "hand," even though the actual forms are not the same in all three

15 Harry Hoijer, "Introduction" (in *Linguistic Structures of Native America*, Harry Hoijer and Others, Viking Fund Publications in Anthropology, vol. 6, pp. 9-29, 1946), p. 12.

16 Fang-Kuei Li, *Mattole* (Chicago, 1930), p. 65; John R. Swanton, "Haida" (in *Handbook of North American Indian Languages*, Franz Boas, ed., Bulletin, Bureau of American Ethnology, no. 40, part 1, pp. 205-282, 1911).

(Athabaskan *dla,* Tlingit *-djin,* Haida *tli'l*). There seem to be two numerals that correspond among the Nadene languages, "one" and "four," and this should be regarded as positive evidence.

Boas lays a great deal of emphasis on divergent vocabulary, declaring that "The question would remain to be answered, why there should be such fundamental dissimilarities between by far the greater number of words, and the question should still be asked how these dissimilarities are to be explained." However, our examination of control cases has already provided the explanation. We have seen that divergences accumulate approximately in proportion to the lapse of time. The only explanation that is needed to account for 60 percent divergent basic vocabulary in Tlingit-Athabaskan is a separate development of about 4000 years.

VIII

To study cultural correspondences, one needs to understand and allow for minor changes of form and function, which affect all traits in the course of their cultural life. In linguistics this means giving attention to changes in the phonetics and meanings of elements. Since it is known that phonetic changes tend to operate with complete consistency, so that all like sounds in like phonetic surroundings are uniformly affected, these are the easiest of all cultural changes to study. By painstaking comparison of divergent modern forms, it is possible to reconstruct the ancient prehistoric forms of words with a high degree of accuracy.

Cultural comparison which fails to take the factor of change into account is bound to fall wide of the mark. By failing to consider phonetic and semantic change, particularly the former, Goddard was able to let pass through his hands a large body of overwhelming evidence of the genetic unity of Tlingit and Athabaskan and yet come away with the belief that only a handful of words showed any appreciable similarity. Here is his conclusion:

> Morphologically, Tlingit is very similar to Athapascan. . . . With this striking likeness in morphology, one would expect lexical similarity leading to the definite conclusion that the languages were originally one, or sprang from the same source. The comparisons made of the lexical content, however, do not justify this conclusion. The similarities are few, forming but a slight percentage of the whole. They might be attributed to accident were there not at hand a more acceptable solution The few nouns that are common are probably due to borrowing. It would be a remarkable thing if fully the number noted had not been borrowed in the course of the generations that Tlingit and Athapascan peoples have been neighbors.[17]

Goddard's whole discussion shows that he does not consider elements com-

17 Goddard, *Has Tlingit a Genetic Relation to Athapascan?*, p. 270.

parable unless they are identical or nearly so in form and meaning. For example he belittles Sapir's comparison of Tlingit *s'axw* "hat" with Chipewyan *c'ah* on the ground that the Athabaskan word refers to "dance hat." Thus, he fails to take into account the shifting that takes place in the meaning-association of linguistic elements in the course of time. By such an approach, one might reject the comparison of German *hund* with English *hound,* since the former refers to dog in general while the latter refers to a given type of dog. But Goddard's phonetic rigidity is an even more serious drawback to meaningful comparative work. His approach applied to French and English might mistakenly conclude that French *feu* and English *fire* are related, even though correct reconstructive method would show this to be impossible because the sounds, though similar, are inconsistent with other known correspondences; the actual historic fact is that the French word is derived from Latin *fokus* "hearth" and has developed a purely secondary and accidental similarity to the English word. On the other hand, Goddard's standard would miss a considerable number of superficially obscured relationships, like English *tooth,* French *dent,* which could be proved by comparative linguistic methods to be of common origin even if we did not possess documental intermediary forms, like Greek *dont-,* Gothic *tunth-.*

In general the process of reconstruction consists of positing and testing for each of the related languages a series of prehistoric phonetic changes by which the contemporary forms may be derived from reconstructed original prototypes. The procedure involves making hypotheses on the basis of one or more instances and then looking for further examples to confirm or contradict the hypotheses. In other words it is a matter of guided guesses followed by a rigid check-up as to the correctness of each guess.

In his comparison of Tlingit, Athabaskan, and Haida, Sapir assembled a large number of elements of similar form and meaning in the three languages. Of these he published only about one hundred in his article, intended as a preliminary report. Among the compared forms he showed consistent relationships of sounds, in some instances involving identity, in some instances consistent divergence. For example, several compared elements shows *n* in each of the languages. In another set of comparisons, *y* of the Athabaskan and Tlingit was found to coincide with *g* of Haida. The fact that the same relationship obtains in a fair number of examples tends to substantiate and to demonstrate historic linguistic processes as against chance similarity. The present author has carried Sapir's exploration a bit farther and continues to find more and more corroboration of the genetic relation indicated by Sapir. However, even the limited data contained in Sapir's published material is fully convincing.

IX

Phonology, besides being a necessary concomitant of any effective study of vocabulary correspondences, constitutes an additional criterion for the differentiation of residual and cumulative similarities. If the phonologies of compared languages are such as to admit their being derived by realistic regular formulas of change from a realistic reconstructed prototype language, one cannot doubt the fact of common origin and residual relation. The interwoven fabric of a reconstructed speech-sound pattern is too complex to be pulled together out of thin air. While a few words can be forced to fit a reconstruction, and while a few historically unjustified correspondences may creep into any reconstructive effort, there are no tricks of the trade that could give a realistic explanation for any large number of forms unless the languages are actually related in the way assumed by the general theory.

Foreign words taken into a language at a given time tend to follow a consistent pattern of phonologic adjustment to the borrowing language. Once these words become part of the language, they share all the phonologic changes that may affect the whole system from that time forward. In consequence it is possible to discover strata of diffusion differentiating elements that came in early from those which were adopted more recently. For example, English *village* is marked by its accent and sounds to be an earlier borrowing from French than the word *garage*.

This consideration removes the last possibility of confusing diffusional overlay with residual relationship. Suppose two languages show correspondences in, say, 15 percent of their basic vocabularies as measured by the standardized list which we have used. As we have seen, it is conceivable though not likely that such a figure might accumulate over a period of many thousands of years, but it is impossible for such a large portion of the basic vocabulary to be adopted in a few generations or even a few centuries. Therefore, in reconstructing the earlier phonetic forms of accumulated borrowings, it is impossible to treat them all on the same level. Some are only slightly divergent, others profoundly different. The reconstructions and the assumed shifts necessary for one group of correspondences do not work out with the next. The material thus falls into a series of strata, and one thereby detects that there has been an accumulation of borrowing over a long time span. Only if a substantial percentage of common elements of stable type can be reconstructed by a unified theory of sound changes may one conclude common origin of the compared languages.

If two languages have, say, 5 percent of basic vocabulary in common, this

could be due either to relatively recent borrowing or to very ancient original identity. These two cases can easily be distinguished through phonologic criteria. If it is a recent diffusional relationship, the elements in the two languages will be phonetically fairly close. In fact the main distinction is likely to be due to the lack of given sounds in one of the languages, necessitating substitution of the next closest sounds. On the other hand the reduction of an originally identical basic vocabulary to only 5 percent in common through gradual divergence would require something like 12,000 years. During such a time span no language can escape suffering a whole series of phonologic shifts. The cognate words in the two languages would therefore be phonologically very divergent. Indeed, unless there were several languages that could be brought into the comparison, it might prove impossible to demonstrate historical relationship at all.

X

By way of conclusion, we may then say that in the structure of complex cultural features, some component traits are relatively fundamental and others relatively superficial. This fact makes possible dependable inferences as to prehistoric relationships whenever divergent forms of the same original traits are found in two or more cultures. If a number of similarities are found in the corresponding complexes of two cultures, the criterion of essentiality enables the culture historian to determine whether the similarities are residual from an originally identical complex or cumulative from continued borrowing of individual traits.

Languages, constituting extensive self-contained complexes operating to a considerable extent on a non-conscious level, lend themselves particularly well to historical study. Highly dependable separate tests can be developed in the three areas of structure, basic vocabulary, and phonology. These three criteria, moreover, are mutually confirmatory.

The effectiveness of this method is shown by applying it to Tlingit-Athabaskan, a case which Boas regarded as impenetrable by comparative linguistics. We are able to demonstrate by qualitative and statistical evidence far beyond the minimum requirements, that these languages are of common origin on an ancient level. Their common period may go back as much as 4000 years. However, the possibility of establishing archaic against diffusional relationship exists even when the time period is far greater than this.

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TENDER- AND TOUGH-MINDED ANTHROPOLOGY AND THE STUDY OF VALUES IN CULTURE

MELVILLE J. HERSKOVITS

I

THE PROBLEM OF VALUES in culture, long implicit in anthropology, has been precipitated out as a question for analysis and discussion by the formulation of the principle of cultural relativism. The concept, in its undifferentiated state, is really nothing new. Many years ago Boas, for example, writing to the problems of his day, could say, "It is somewhat difficult for us to recognize that the value which we attribute to our own civilization is due to the fact that we participate in this civilization, and that it has been controlling all our actions since the time of our birth; but it is certainly conceivable that there may be other civilizations, based perhaps on different traditions and on a different equilibrium of emotion and reason, which are of no less value than ours, although it may be impossible for us to appreciate their values without having grown up under their influence."[1] Or, in 1934, Ruth Benedict could write: "No man ever looks at the world with pristine eyes. Even in his philosophical probings he cannot go behind these stereotypes; his very concepts of the true and the false will still have reference to his particular traditional customs."[2]

In these terms, the significance of the differences between peoples, as concerns the relation between custom and sanction, reduced itself to a question of cultural superiority or inferiority. To this question, American anthropologists, at least, have given a clear and unequivocal answer; in the vast majority, we are agreed that objective indices of cultural inferiority and superiority cannot be established.

The publication of the "Statement on Human Rights"[3] submitted by the American Anthropological Association to the United Nations in 1947, and the analysis of relative values in culture in *Man and His Works*[4] published a year later, brought to the foreground of consciousness some of the broader philosophical and practical implications of this position, that had come to be accepted without too much questioning. And since, in the world of free scholarship it is through discussion that concept and theory are clarified, this paper represents an attempt

1 *The Mind of Primitive Man* (first edition, New York, 1911), p. 208.
2 *Patterns of Culture* (New York, 1934), p. 2.
3 American Anthropologist, vol. 49, pp. 539-543, 1947.
4 Melville J. Herskovits, *Man and His Works* (New York, 1948), pp. 61-78, 653-655.

to analyze some of the reactions which these presentations stimulated, and thus to carry our thinking on this important problem of values in culture a step farther.

II

Many years ago, William James, with his gift for homely phrasing, suggested that people could be divided into those who are "tended-minded" and who are "tough-minded."[5] We need not here go into the way in which James characterized the modes of thought of those who fitted his categories, for he himself set them forth merely to illuminate his concepts. He was too wise a man to accept any polar type as characteristic of any individual, and he made this quite clear in his discussion. The initial trait he set down for each type—the tender-minded "going by 'principle' " (rationalistic) and the tough-minded "going by 'facts' " (empiricist)—is enough for our purpose. For whatever the merits of his specifications, the fact remains that he did put his finger on two kinds of thought that set off persons and, as has been increasingly recognized, also set off ideas from each other—designations so shrewd and vivid that it is easy to understand why they caught on and moved into common speech.

They are particularly applicable, it would seem, in considering the problem of cultural relativism; for make no mistake, cultural relativism is a "tough-minded" philosophy. It requires those who hold to it to alter responses that arise out of some of the strongest enculturative conditioning to which they have been exposed, the ethnocentrisms implicit in the particular value-systems of their society. In the case of anthropologists, this means following the implications of data which, when opposed to our enculturated system of values, sets up conflicts not always easy to resolve.

There are other reasons why the acceptance of cultural relativism by anthropologists has meant holding to a tough-minded point of view. One friendly critic of our discipline, more witty than wise in his assertion, has defined an anthropologist as a person who respects every culture-pattern but his own. Like any other *bon mot,* it is true and not true; but the part that is true is to the point here. That is, anthropologists, as with any members of any society, live in a climate of opinion whose influence is so strong and yet so gentle that it is only by an effort of will that one becomes aware of it. And on this point the present-day climate of opinion in the United States—and in this paper we are concerned only with American anthropologists, since cultural relativism has not as yet evoked any responses from elsewhere in the world—is quite confused. For despite the deep-seated feel-

5 *Pragmatism, a New Name for Some Old Ways of Thinking* (New York, 1907), p. 11 ff.

ing we hold to in this country that the ideas and ways of the Western world are best for mankind, the climate of opinion at the same time maintains a firm belief in the importance and desirability of political freedom for all people. This duality of sanction has set up powerful ambivalences that come into play when a relativistic point of view is put forth concerning the validity of the differing value-systems to be found in the myriad cultures of mankind.

Moreover, discussions of relativism seem sometimes to be facing in more than one direction. This is because the relativistic position has of itself three quite different aspects; distinctions that heretofore have tended to go unrecognized. One of these aspects, that is, is methodological, one is philosophical, and one practical.[6]

As method, relativism encompasses the principle of our science that, in studying a culture, one seeks to attain as great a degree of objectivity as possible; that one does not judge the modes of behavior one is describing, or seek to change them. Rather, one seeks to understand the sanctions of behavior in terms of the established relationships within the culture itself, and refrains from making interpretations that arise from a preconceived frame of reference. Relativism as philosophy concerns the nature of cultural values and, beyond this, the implications of an epistemology that derives from a recognition of the force of enculturative conditioning in shaping thought and behavior. Its practical aspects involve the application—the practice—of the philosophical principles derived from the method, to the wider, cross-cultural world scene.

In these terms, the three aspects of cultural relativism can be regarded as representing a logical sequence which, in a broad sense, the historical development of the idea has also followed. That is, the methodological aspect, whereby the data from which the epistemological propositions flow are gathered, ordered, and assessed, came first. For it is difficult to conceive of a systematic theory of cultural relativism—as against a generalized idea of live-and-let-live—without the pre-existence of the massive ethnographic documentation gathered by anthropologists concerning the similarities and differences between cultures the world over. Out of these data came the philosophical position, and with the philosophical position came speculation as to its implications for conduct.

6 Bernard Siegel (*Currents of Anthropological Theory and Value Concepts*, Southwestern Journal of Anthropology, vol. 4, pp. 199-210, 1948) adumbrates this tri-partite approach, but did not differentiate relativism in method, philosophy, and practice except by inference. See especially pages 203-204.

III

Kroeber, in a recent summary of developments in anthropology during the last half-century,[7] initially stresses what would seem to be the methodological aspect of the relativistic approach to the study of culture. "Anthropologists now agree," he states, "that each culture must be examined in terms of its own structure and values, instead of being rated by the standards of some other civilization exalted as absolute—which in practice of course is always our own civilization." In the sentences that follow, he moves to the philosophical implications of the methodological precept: "This anthropological principle leads, it is true, to a relativistic or pluralistic philosophy—a belief in many values rather than a single value system." "But why not," he continues, "if the facts so demand? The domain of life is certainly pluralistic, what with a million species on our own small planet. I have not heard of biologists bewailing the diversity of species. Rather, they try to find some kind of order in it."

At this point, however, Kroeber injects a new note, and, in doing so, exemplifies the need for clarification of the relativistic approach in its varied implications. For the note that he injects lies neither in the modality of method, nor philosophy, nor practice. "Quite correspondingly," he says, "anthropologists try to treat all cultures, including our own civilization, as parts of nature—without preferential and partisan priorities. This may be distasteful to partisans, but it is certainly the only way of science." This is the note to which he returns at the conclusion of his article, where, in describing "the common attitude" that has held anthropologists together, despite their special interests, and has made for an "integrated attack on the biological, the sociocultural and the linguistic phenomena presented by man," he says, "This attitude is expressed by the principle of the relativistic approach. It might equally be called the naturalistic approach."

It is not within the compass of this discussion to consider whether the study of culture lies in the domain of the natural sciences or the social sciences—or, indeed, considering the philosophical aspects of the question of our concern, whether it lies in the realm of the humanities. For our purpose, it is enough to point out how, in a single discussion, relativism can variously be conceived.

The important thing to realize is that, in his method, the present-day field-worker accepts the relativistic principle as a basic postulate. Granting we have not given the attention to method this important phase of our work deserves, nonetheless such discussions of it as we have are always based on the premise that objectivity is a primary requirement of our scientific endeavors. In our field-work we ask

7 *Anthropology* (Scientific American, vol. 183, pp. 87-94, Sept., 1950).

questions; and if we challenge a response, it is a calculated challenge, to elicit a reaction that will reveal an underlying value, or a rationalization of the kind that tells one much about a value-judgment. We couch our findings within the frame of reference set by the culture we are studying; in short, the behavior we concern ourselves with is analyzed in terms of its relevance to the total structure of cultural form and sanction of which it is a part.

IV

It is inevitable that the area of disagreement between anthropologists should widen as we moved from the methodological to the philosophical implications of cultural relativism, though published statements of disagreement with the relativistic philosophy are not easy to find. We may take as an example the most explicit anthropological demurrer that has thus far appeared as an example of the line criticism has taken.

This demurrer,[8] by Kluckhohn, exemplifies the ambivalence that arises out of the conflicting points of view that, as has been stated, are simultaneously present in the current of contemporary American thought. Its initial statement concerning cultural relativism is as follows: "To understand 'the meaning of a way of life to those who have it' is a significant and indeed a noble undertaking. To understand, however, should not necessarily mean to accept or even to remain content with description." One cannot but speculate on the intent of this passage. Does it signify that if an anthropologist studies the sanctions of a marriage system based on polygyny, he should not accept these sanctions for himself, in his own thinking about values, or in his own behavior, in which case he might become polygynous?

And how, one asks, should an anthropologist manifest his refusal to "remain content with description"? If this implies that he should seek deeper levels of integration in studying a culture, none will dispute the point. But in its context, one cannot but wonder if this does not imply the duty of an anthropologist to seek to change those elements of the culture of which he disapproves—in the case of our example, to advocate monogamy or polyandry for the polygynous people being studied. Kluckhohn does propose, as a "test for extrinsic values" the formula suggested by Thorndike—"are the means effective to the ends?" Yet, at this stage of anthropological sophistication, one would think that it might be taken as self-evident that this so-called test, in actuality, is met by every functioning value-system in every functioning culture.

We may follow this argument further. "The doctrine that science has nothing to do with values," Kluckhohn states, "is a pernicious heritage from Kant

8 Saturday Review of Literature, Sept. 18, 1948, pp. 11-12.

and other thinkers. Scientists dare not abdicate the right to study values by scientific means." In some bewilderment, one wonders how the relativistic position, which stresses the understanding of values—something that obviously, under the rubric of anthropological science, can mean only their study and analysis—can be contorted into an "abdication" of the "right" to study them. Does this exemplify how in the search for social "laws" that has occupied so many anthropologists, and the preoccupation with making of anthropology a "science"—as if it were not one—our traditional humanistic concerns have been lost sight of? Is it this latter aspect of our interests, which involves an understanding of the range of the creative drive in man and the value-systems that give point to his living, that we are told is being "abdicated" because some anthropologists have put aside the search for meaning in their preoccupation with form and structure?

"The amnesty which the anthropologist gives to the exuberant variety of cultural patterns," we are told, "must be that which the psychiatrist gives to incestuous dreams." It is difficult to believe that this is more than an exuberant figure of speech. Are anthropologists, working cross-culturally, really to decide what is good and bad in culture and, as social psychiatrists, attempt to cure the bad and promote the good? The psychiatrist, working with individuals who are deviant in terms of their own cultural prescriptions, frames procedures to permit his patient in the everyday round to fill the cultural prescription in a socially approved way. But where are the cross-cultural guides for the anthropologist? He, like all human beings, has undergone enculturative conditionings to the standards of his proper culture. Can his judgments be so Olympian that they are not influenced by these standards? The inevitable basic questions enter: Whose good? Whose bad? Whose means? Whose ends?

Kluckhohn's answer to these questions is found in the final passage of his discussion. "Some values," he says, "may well be regarded as within the realm of taste or choice or circumstance. But other values would seem to be appropriate and necessary to all men—given the nature of the human organism and the conditions to which all men, regardless of race and culture, must adjust." And to achieve this, one must "recognize what must eventually be the most important task" of our science, the "discovery and testing in the scientific crucible of the many values that transcend cultural variation."

One again must ask, however, what are those values that "seem to be appropriate and necessary to all men," and especially those that "transcend cultural variation." Is it possible that this is an attempt to have one's relativistic cake and eat it? Has an ambivalence arising out of conflicting currents of thought made it so difficult to recognize the critical point of the difference, precisely in the cross-

cultural study of values, between universals and absolutes?[9] More than this, is it possible we see here a failure to apply the elementary lesson of cultural psychology, that all men are so conditioned in their perceptions, their emotions, and their judgments that these are framed, as far as the members of any group are concerned, within the limits of variation in belief and behavior sanctioned by the group at a given moment in its history? One may wish to minimize the difference, for the sake of argument, between the absolute values on which many peoples, especially ourselves, insist, and those generalized orientations of culture, the universals, that we find in all societies. Dialecticians, such as Child, may wish to apply to relativism the exercise of a sterile logic which proved, after the manner of Zeno, that one could never reach a given point in space, or in medieval times, disputed the choreography of angels. It has indeed occurred to anthropologists "that the basis of moral judgment might be found elsewhere than in logic, fact, or custom. . . .";[10] but this leads us into a realm of mysticism and undebatable belief with which we cannot be concerned when, as scientists, we follow the facts where they may lead us, after the tough-minded empiricism of a science of man.

V

Despite the demurrer that has been cited, American anthropologists, on the whole, seem quite prepared to accept the philosophical implications of their scientific findings. This is evident, for example, in the criticisms of the American Anthropological Association's "Statement on Human Rights" that followed its publication. In all of these, discussion centered on the third aspect of the cultural relativistic position, its applications. In these discussions, indeed, the objections seemed not so much to rise from reservations to the philosophical position from which the "Statement" derived as from a feeling that the logic of relativism has not been followed with enough rigor, and that the approach of the "Statement" contained a hidden ethnocentrism that tended to vitiate the position it assumed. Barnett, for example, reminds us[11] that "peoples of all degrees of sophistication will still prefer their opinions to ours despite the quantities of 'evidence' that we can bring to bear." Or Steward[12] says that "a declaration about human rights can come perilously close to advocacy of American ideological imperialism."

9 Cf. *Man and His Works*, pp. 76-78.

10 Arthur Child, Review of *Man and His Works* (Ethics, vol. 59, pp. 222-225, 1949). Another critique of cultural relativism by a philosopher, more extended than that of Child and in the full philosophical tradition, in contrast, of calm examination of an intellectual position, appeared too recently to permit any consideration of it here. See Eliseo Vivas, *The Moral Life and the Ethical Life* (Chicago, 1950), especially Ch. I.

11 *On Science and Human Rights* (American Anthropologist, vol. 50, pp. 352-355, 1948).

12 *Comments on the Statement on Human Rights* (American Anthropologist, vol. 50, pp. 351-352, 1948).

The point at issue here would not seem to be relativism, as such, but whether anthropologists, as scientists, can speak as scientists on matters of practical concern. This is the point to which Bennett wrote[13] in discussing the two comments on the "Statement" that have just been cited, when he says, "The criticisms of Steward and Barnett *could* lead to this: Because of the possibility of . . . disagreement, we must blind ourselves to the implications of our work. This, however, virtually denies a social humanity to the scientist. We would appear to need debate and argument over the implications of anthropological research—not a pretense at purity."

Of similar import are certain reaction to the implications of relativism as set forth in *Man and His Works*. Thus Hoebel, writing to the point made that, in practice, the philosophy of relativism is a philosophy of tolerance, and recognizing "that a larger measure of tolerance is needed in this conflict-torn world needs no arguing," feels that relativism fails to "give due consideration to the need for selectivity and integration in the formation of culture." "It is a social need," he continues, "for any society to select but a few, and reject many, out of all possible lines of behavior. . . ." And because a "world society means a world culture with a certain measure of integration, and all present cultural systems are most certainly not compatible with each other," then "some social norms will have to give along the way. Not all can be tolerated."[14]

On the other hand, Bennett's position on the "Statement" that we are justified, while speaking as scientists, in using only those findings of our science that contribute to the ends we, as citizens desire,[15] would seem to be far too cynical for most scientists. This is scarcely the answer to the problem the scientist must face as citizen, if the franchise of science as a means of achieving an objective analysis of experience is to be maintained. It is simply not true, as Bennett asserts, that in discussions of racism, anthropologists suppressed the known facts concerning the existence of differences between human groups in their desire to stress similarities. It would be exceedingly difficult to document the statement he makes in this connection, that "Scientifically, we know that differences between human varieties can and do exist; ideologically, it serves our purpose to deny them." It is apparent that Bennett has forgotten the difference between a scientist's ordering of known fact for the layman so as to place them in scientifically valid perspective and the propagandist's suppression of facts to attain a given end.

These discussions, with their varying emphases, also have to do with the

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13 *Science and Human Rights: Reason and Action* (American Anthropologist, vol. 51, pp. 329-337, 1949).

14 American Anthropologist, vol. 51, pp. 473-474, 1949.

15 *Op. cit.*, p. 334.

broader problem of the relation between the research aspect of our science and its applications, a topic that is outside the scope of this paper. This is clear, for example, when Steward states, "As a scientific organization, the Association has no business dealing with the rights of man." Barnett, likewise, is writing to this same problem when he says, "It is an inescapable fact that we cannot at the same time be moralists (and policy makers) and scientists." The questions raised by the problem of the scientist as citizen are not only being faced by anthropologists, but by all scientists and, indeed, by scholars in the humanities as well. Admittedly, it is especially difficult in the disciplines where man studies man. Here we may only call attention to the fact that, as has been pointed out elsewhere,[16] many of these difficulties would be resolved if social scientists would recognize the difference between what has been called the curiosity function of their work—"pure science" —and the application of their findings—engineering. This would not resolve all the problems, as the exact and natural sciences have learned, but it would greatly reduce the number of them that would have to be faced.

Only one more point may be made of the criticism levelled at the attempts that have been made to point the practical implications of the relativistic findings of anthropology. It is difficult to see how the recognition of a cultural difference is the same as an advocacy of it. There can be no question as to the selectivity of cultures; the primary lesson of cultural diffusion teaches this. It would seem that what cultural relativism implies in its recognition of the existence of cultural pluralism is just this: that the values every human group assigns to its conventions arise out of its own historical background, and can be understood only in the light of that background. Relativism establishes the fact, and forces the recognition of the process as a continuing one; and on the level of application, stresses the importance of allowing, rather than imposing acceptances of cultural elements newly experienced.

Steward's doubt that "in urging that values be respected because 'man is free only when he lives as his society defines freedom,' we really mean to approve the social caste system of India, the racial caste system of the United States, or many of the other varieties of social discrimination in the world" only confuses the issues. To recognize the force of conventions in cultures other than one's own that are not congenial to one's enculturated patterns of thought is one thing; to insist on suppressing them is quite another. In addition, it is something entirely different when we, as Americans, try to do something to correct "the racial caste system of the United States" of which we, as members of the society of whose culture this is a part, do not approve. In recognizing the validity of all ways of

16 *Man and His Works*, pp. 649-653.

life for those who live in accordance with them, cultural relativism does not deny the dynamics of culture by insisting on an unchanging acceptance by a people of their pre-existing ways of life, or by failing to take into account the influence of cultural transmission in making for cultural change. It accepts these, and in its acceptance achieves the most fruitful approach to the problem of the nature and significance of differential values in culture that has yet been devised. For, as scientists concerned with the problem of value, we will deny our professed methodological assumptions and the empiricism of our scientific point of view if we do not move from the facts as we have established them in arriving at generalizations regarding this phase of culture which we realize is so important for us to understand.

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THE LAPPS OF FINLAND*

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THERE are far fewer Lapps in Finland than in Norway and Sweden, only about 2,500, but they are in some way the center of the Lappish group of peoples, and interesting because, up to the year 1945, every form of Lappish economic life existed among them.

It is assumed that the Lappish stock originally lived in the area between the Dvina River which flows into the White Sea, and the eastern end of the Gulf of Finland, perhaps also farther to the south in the neighborhood of the Valdai Hills, where remains of bones have lately been found of a short, brachycephalic, "Laponoid," Stone Age people. The Lapps seem to have come to Finland during the Bronze Age (here the first millenium BC). They may have found here some survivors of the Finno-Ugrian people of the Stone Age, who are assumed to have left behind them the so-called "comb-ceramic," if so, they must have absorbed them. Some of the last of these people lived beside the Kola fjord opening into the Arctic Ocean; skeletons found there from the end of the Stone Age or the early Bronze Age are considerably larger than those of the Lapps. Bronze celts of eastern type have been found in twenty places, from Inari in Lapland to south Finland, and these probably belonged to the ancestors of the Lapps. At the beginning of our era, the Lapps must have already occupied a very wide area, including Finland, Finnmark, north Sweden, the Kola Peninsula, and east Carelia right down to Ingermanland and the southern part of the isthmus between Lakes Ladoga and Onega. They were very few in number and had no permanent dwellings; the families wandered over certain areas according to the seasons and to the need to fish and hunt. The earliest historical facts which seem to refer to the Lapps are to be found in Tacitus' (ca. 55-117 AD) *Germania,* where it is stated that *Fenni* live on the right side of the Mare Suebicum, i.e. to the right of the mouth of the Vistula beyond the Aest (Balts), i.e. about where the Baltic Finns must have lived at that time. In the middle of the second century Ptolemy speaks of two kinds of *Phinnoi* people, one of whom lived beside the Vistula and the other in the north part of the island of Scandia. Thus it appears that the two meanings of the name Fenni—in Norwegian it means a Lapp; in Swedish and in other languages it means a Finn—originated in very ancient times. The word Lapp, according to a current opinion, is derived from Finnish.

* Translated by Miss Agnes Dawson.

Procopius (562 AD) gives, in his history, the earliest ethnographical description referring to the Lapps (*Screrefennæ*). The Lapps' own name for themselves is *Sabmi* (plural *Samik*).

The Lappish language belongs to the Finno-Ugrian family. As it is generally assumed that the Lapps are rather different from other Finno-Ugrian-speaking peoples, it is considered that the Lapps have assimilated the language of the latter. K. B. Wiklund presumed that the Lapps—about 2000 years ago—exchanged their former, unknown language for the so-called primitive Finnish. On the other hand, E. N. Setälä's hypothesis is that they had borrowed from some older Finnish-Ugrian language form, preserved to the present day only in Lappish, which again has been greatly influenced by the primitive Finnish and then by Finnish even down to our times.[1] The real truth is probably somewhere between these two opinions. It can be assumed that Lappish arose from "proto-Finnish" at the latest about 2500 years ago, that is during the Bronze Age, and then developed naturally, probably still to some extent under the influence of primitive and later Finnish, especially by borrowing words. In Lappish there are also numerous Scandinavian loan-words, the oldest from primitive times (ca. 400-800 BC). It is believed that the Lapps—or some of them—came into contact with the ancestors of the Scandinavian peoples somewhere in the north of Norway, perhaps in the neighborhood of Tromsö, and possibly also in southeast Bothnia in Finland, where presumably during the period ca. 200-750 AD there were some settler from Sweden: several archaeological finds support this assumption. There are very many Russian loan words in Skolt and Kola Lappish, but they are generally of a late date. Finally it should be stated that Lappish has quite a few root words—perhaps one-third of its whole vocabulary—that have no etymological counterparts in any other known language. Primitive Lappish seems to have been very homogenous but rapidly became specialized owing to the isolation of the different tribes, and today the Lappish dialects differ from each other just as much as, for example, the Romance languages.

In Finland there are three Lappish dialects: (1) the so-called North Lappish (the same as that in Finnmark), (2) Inari Lappish, and (3) Skolt Lappish, the last two being more nearly related than the first.

The Lapps have also—comparatively late—lived farther south in Finland than they do at present. This is shown in place names, of which about 575 all over the country contain the word Lappi (= Lapp). Then there are several hundred place names which can only be explained as coming from Lappish, some of them so far south as the neighborhood of the capital, Helsinki. In 1390 Lapps are mentioned as being in central Finland, and in the years 1543-1652 in

1 See footnote at end of article.

Savo. From the time when the Finns began to migrate to their country from the south coast of the gulf of Finland—about the beginning of our era—the Lapps either avoided the newcomers by moving farther north or became absorbed by them. The Finns carried on a fur trade with the Lapps and taxed them. At first the taxing was done, not by the state, but by private persons for their own profit.

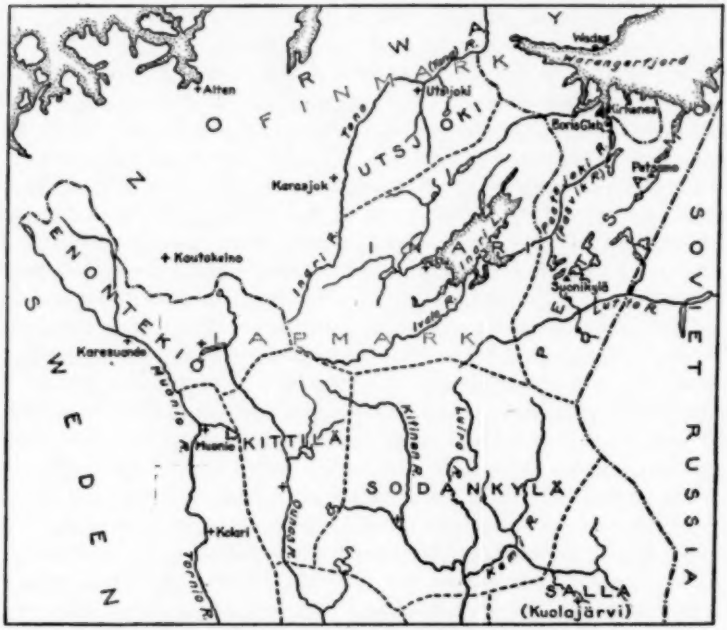

FIG. 1. The Lapp area of northern Finland before 1945.

Even before Finland was incorporated with Sweden, "Kvaener" are mentioned as being at the innermost bay of the Gulf of Bothnia (for the first time in about the 870's in the history written by Alfred the Great, King of Wessex, 850-899). They probably belonged to some West Finnish tribe. After them we hear of "Pirkkalaiset" (Swedish "Birkarlar"), traders or tax collectors from the borders of Satakunta and the Häme (= Tavastland). King Magnus Ladulas confirmed their rights and privileges at the end of the thirteenth century; they took possession of all north Finland and drove out of its eastern parts the East

Karelians, who had been taxed by the Lapps living there for the benefit of Novgorod and later the Tsar in Moscow. The Pirkkalaiset also taxed the inhabitants of a great part of Swedish and north Lappmark, until King Gustav I in 1554 deprived them of this right and transferred it to the crown.

Another fact in the history of the Lapps in Finland is that Christianity began to spread among them while Scandinavia was still Catholic. The priests in Tornio and Kemi especially paid annual winter visits to the Lapps and preached Christianity to them, though it was not until the middle of the seventeenth century, when churches began to be built and special priests appointed, that paganism began to decline.

The migration of Finns to Lappland was noticeable from the seventeenth century. At present the Lapps live only in the four most northerly districts: Enontekiö, Utsjoki, Inari, and Sodankylä. The original Lapp population of Sodankylä died out about a hundred years ago, but in the 1870's and 1880's a number of Reindeer Lapps moved in from Enontekiö and Kautokeino (in Finnmark) and took their places. The Lapps are now in the minority everywhere except in Utsjoki where they form about 89 percent of the population; in Inari they are ca. 37 percent, in Enontekiö 12 percent, and in Sodankylä 2 percent. In 1930 there were 630 Lapps living in Utsjoki, 840 in Inari, 163 in Enontekiö, and in Sodankylä 131. In Petsamo (Petchenga), which fell to Finland in 1920, there were in the same year (1930) 460 Greek-Catholic Lapps and 58 Lutherans; in 1930 they formed about 15 percent of the population of that district, the Finns being in the majority. At the end of 1944, when Finland lost Petsamo, the people were evacuated to the west and the Skolts now live in Inari.

The Lapps of Finland can be divided into two main groups according to their way of life: (1) the Reindeer Lapps, who include most of those in Enontekiö and Sodankylä; though some are to be found in other districts and those that are completely nomadic are now only in Enontekiö, while the rest have already built themselves huts of logs in which at least the mother, the small children, and the old members of the family live permanently. (2) the Fisher Lapps, of whom there are four sub-groups: (a) the half-nomadic Skolts, who used to have four ordinary dwelling-places, one for each season of the year; they also own reindeer and sheep; (b) The Inari Fisher Lapps, who fish in the lakes, rear reindeer and sheep, and till the ground to a small extent; each family has its own hut, only a few have two dwellings, one for summer and one for winter; (c) the Lapps who live beside the River Teno (Tana) in Utsjoki and practise salmon-fishing, rear cattle and sheep, and to some extent also engage in agriculture and reindeer-breeding; most of these have a winter and a summer place;

(d) on the coast of Petsamo until 1944 there were a number of Lutheran, maritime Lapps whose chief employment was sea-fishing and who to a less extent reared cattle and collected hay; very few of them owned reindeer. Hunting and trapping are practised everywhere among all four groups but are rapidly decreasing.

As regards the anthropology of the Lapps, their height is less than that of other European stocks: the men's average is 160.4, the women's 149.1 cm (Utsjoki ♂ 162.0, ♀ 151.0 cm; in Inari ♂ 161.1, ♀ 149.9 cm; in Petsamo ♂ 157.7, ♀ 146.9 cm). They are very brachycephalic, the cranial index being ♂ 84.2, ♀ 84. It has, however, been stated from the examination of some skeletons found about 100 to 300 years ago that the Lapps are now about two centimeters taller, owing chiefly to the growth of the tibia. It has also been noticed that if they live in huts for two or three generations and on an increased vegetarian diet they become considerably taller. A picture of the genuine Lapp as preserved best among the Reindeer Lapps is as follows: head rather small, roundish, forehead low, cheek bones prominent, the lower jaw comparatively underdeveloped; the eyes small but straight and lacking the Mongolian fold, brown or varied in color; nose flat, often concave, but not specially broad; hair dark, coarse and straight, beard scanty and usually lighter than the hair; skin grayish-white or a little yellowish; legs short compared with the trunk (the Reindeer Lapps are often bow-legged); hands and feet small; muscles well-formed.

At the present time it seems that the Lapps are to be considered a distinct race that can be placed between the Mongoloid and the Alpine, both brachycephalic, rather short races. In Alpine valleys individuals are sometimes to be seen who are extraordinarily like Lapps, not only in stature, but also in bearing and expression. Yet it must be added that often among the Lapps are to be met individuals who recall the Finns (the so-called East Baltic race) and the Scandinavians in their appearance.

But still, though the Lapp in general looks little and insignificant, he has strength and toughness: he is used to carrying heavy loads and going long distances on foot; and this has given him his characteristic, slightly waddling, yet easy gait. Some information about these people is obtained from the Church Books of 1750-1850. As regards the dead, in Enontekiö 45.5 percent were under 11 years, in Utsjoki 29.9 percent, and in Inari 19.6 percent: those over 70 years old in Enontekiö were 11.1 percent, in Utsjoki 23.6 percent, in Inari 26.4 percent. The average age at death was in Enontekiö 27.75 years, 39.40 in Utsjoki, and 50.69 in Inari. The most usual causes of death were senility, "sting" (a sharp, sudden pain, probably pneumonia), consumption, fever, small-pox,

scarlet fever, and drowning. It is probably owing to their laborious life that so few of the Reindeer Lapps live to old age.

He who meets a Lapp for the first time may consider him sullen, stupid, and suspicious. In some districts the fear of strangers can show itself in shyness. For example, among the Forest Skolts, when a stranger approaches a dwelling, the inhabitants may flee into the forest and not return until they are convinced that there is no danger. On the other hand, with his acquaintances the Lapp becomes talkative, friendly, and animated. He asks for news and relates all kinds of small happenings, laughing heartily at amusing remarks or at other people's little weaknesses. This gay side of his disposition is specially in evidence on occasions when many people come together, such as the marking of deer and festivals in the church village; most of all when they have had intoxicating liquor, of which the Lapps, like all the inhabitants of the arctic regions, are very fond. Then they "jodel" about their companions with short, witty expressions to certain tunes, to which replies are made in like manner. The intelligence of the Lapps is greater than might be expected: wherever the children go to school it has been noted that their memory and capacity to understand are very much the same as those of any other nationality. Their family life is peaceful; the children are remarkably good and obedient, and do not often need to be punished. Honesty and hospitality are unexceptional, at least far away from the main lines of communication where various kinds of tramps can have a demoralizing effect. The moral standard of the Lapps is relatively high: crime, especially of the graver kind, is rare. The exception is the occasional stealing of reindeer, and this may be explained to some extent by the fact that they regard reindeer as a kind of forest animal, of which the private ownership is not quite clear. Rank and class are not clearly defined among the Lapps, though even here wealth gives some kind of power and authority to its owners; thus, for example, it is difficult for a poor youth to get a rich Reindeer Lapp's daughter to wife. Among the Fishing Lapps, fortunately, property is more evenly divided. The Reindeer Lapps are generally richer than others and behave more or less arrogantly towards the fishers and hunters who live in poorer circumstances. Otherwise the healthy, varied and exacting life among the mountains, with its long journeys, makes these nomads self-conscious and far-sighted, as revealed also in their contact with strangers. The dark side of their disposition is often idleness and lack of enterprise: this is noticeable, for example, among the new settlers, many of whom have not accustomed themselves to the promptness demanded by a fixed mode of life. Order and cleanliness in housekeeping are often unsatisfactory, although it must be admitted that there is continuous improvement.

REINDEER BREEDING

In the economy of most Lapps the reindeer is very important. They get food from its flesh, blood, and milk, clothing from its skin, sewing-thread from its sinews, glue and material for many small objects from its horns and bones, and containers or holders from its intestines—even the hair has its trade value. The reindeer has presumably been tamed since very ancient times, chiefly so as to use the cow as decoy in hunting the wild deer—the lasso originated in those times—but for a long time the keeping of reindeer was very limited. Large herds can scarcely have been reared before Other, who lived in the ninth century AD in Norway and owned 600 deer (owned by different Lapps?). It is probable that large scale reindeer-keeping arose first among the Lapps of Scandinavia where its most important center still lies. In olden times there were few reindeer in Finnish Lappmark, but they increased noticeably during the nineteenth century and right up to the Second World War. At present 1000 deer is about the maximum that a family can own. Such herds owned by Reindeer Lapps are still to be found in Enontekiö and Inari; but also among the Skolts a few decades ago there were two families that owned 500-700 animals.

There are two main types of reindeer-breeding: (1) that of the Reindeer Lapps, who watch their herd all, or nearly all, the year round, and (2) that of the Fishing Lapps, who allow their herds to wander freely in summer. Herding methods vary somewhat from place to place, especially among those who are wholly nomadic, but are to some extent seasonal. Rutting-time is in the beginning of October, after Michaelmas and lasts two or three weeks. Then, at the latest, the deer are divided among their different owners: they often become mixed during the summer (even among the nomads). Before this period the bulls begin to collect some twenty to thirty cows which they jealously keep beside them, which is of great assistance to those who are collecting the animals. After the rut the bulls shed their horns and leave the herd for a while. Before the rut unwanted bulls are castrated by nipping and crushing the testicles with the fingers. Calving takes place in May and continues for some weeks. In the spring the bulls and bucks try to get away from the cows and calves, so that about the first of May they form a separate herd or are set free. When the mosquitoes begin to appear in large numbers about midsummer the deer like to get away to the hills and keep together. Then it is easy to collect them and mark the calves by making various cuts in the ears. If the autumn is wet, edible mushrooms are abundant and the deer scatter easily in search of this tasty food, and then it is very difficult to look after them. In winter it is quite the opposite: the herds

are in the woods and move the more slowly the deeper the snow. A special characteristic of the reindeer is that they always move against the wind. If it blows for a long time from the same direction, the herd may—if not prevented by dogs—wander far way, perhaps into another country if their owners live near the frontier. The mountain Lapps' autumn dwelling-places, where there are *koatti* (cone-shaped huts) and *luõvvi* (stands, i.e. camping places), are on the edge of the forests. There they arrive at the end of August or the beginning of September. Then the deer can graze even without a herdsman if there are no wolves about. At the end of September or the beginning of October the bulls are slaughtered for the winter's stock of food: they are then very fat. After the rutting time they begin to move into the wooded areas in the middle of November. The ground is already covered with snow, and at intervals of two or three weeks they all—animals and people—move to fresh pastures. Every day the cows are brought to the tents for milking, until this is stopped at the end of November. About Christmas, when the cold is most severe, the pine forests are reached, and there they stay for about a month in the same spot. Then they wander on (*jottih*) through certain tracts till they arrive at their goal at the end of March. After the snow surface has hardened in April, a move is made back to the mountains, to the place of calving. The deer willingly follow because there is so little pasture—the reindeer-moss lying deep under the hard snow—but higher up there is less snow, even bare patches here and there. In the middle of the day, when the sun melts the snow, the traveling Lapps rest for a while, often just in their sledges or on pine branches, driving preferably by night. Sometimes it rains or wet snow falls; then the streams overflow, and traveling is very difficult, especially for the children and the old people. In the beginning of May, often after a journey lasting only a week, they arrive at the calving place which lies in the birch districts—the deer are always ready to return to the place where they were born. Then, when the snow has melted, the herd tries to get back again to the pine forests and must be kept together with the help of the dogs until the period when the mosquitoes begin to appear. The summer is passed on the mountains.

After the calving some Reindeer Lapps allow their herds to go free at the beginning of June, but collect them again after midsummer in order to mark the calves. On hot days the deer find their way up the slopes looking for snow-drifts but if it becomes colder they go down to the valleys. Sometimes they are kept together also in June, and the cows are milked from midsummer on; before that the calves get all the milk in order to strengthen them. This milking takes place in a large enclosure made of birch trunks with their branches left on:

in olden times this enclosure was sometimes made of stones on the bare mountain side. Some of the milk is made into cheese.

Summer is the busiest time for the Lapps, especially if it is not possible to remain long in one place because the grass is so scanty. Towards the end of July or the beginning of August the deer again need to be separated, using the enclosures; only then can those calves be marked which have not been caught earlier. At the beginning of September, some of the herdsmen go out to collect with lasso and dogs such deer as have left the herd during the summer. The lasso is seventy-two to seventy-eight feet long; its loop runs through a piece of horn with two holes (as among the Samoyed and some other Siberian peoples). The reindeer dogs belong to the north Euro-Asiatic "Pomeranian" race with an erect, curled tail and mostly erect ears; usually they are dark in color, even black, and the hair is long. A wealthy Lapp has six to ten dogs.

The Fishing Lapps tend their small herds—usually some twenty, thirty, or a few hundred in number—in the following way. In east Lappmark the deer are allowed to wander about quite freely all summer. They belong to the so-called "forest race," are larger than the mountain deer, and even in the mosquito time remain in the forest districts, running about on the eskars and lake shores where there is wind and the air is a little fresher. They are not collected until the beginning of September, and then they, or at least the cows, are tethered near the dwellings until the snow begins to fall. Cheese is made from autumn until "Judgment Sunday" (November 21st). In winter the deer are set free but still watched, some of them tethered [hobbled?] and wearing a bell. Now the herd is kept at a distance from the dwellings—at most thirty km—and the herdsmen live near them in a cloth tent (*lavvu*). In the spring, during the calving-time, the cows are kept tethered for three or four weeks, but the males are allowed to move freely except a few who may be kept as draught animals or beasts of burden. After the calving the cows are also allowed to go free.

At the present time every owner belongs to some reindeer breeding organization—this was first developed among the Lapland Finns—and in their area the "Reindeer host" arranges meetings of its members for the discussion and settlement of common questions and to see that the grazing movements follow in the correct order. At these meetings also the damage done by the deer to the peasants' meadows and hay-drying hurdles is estimated. Although the natural increase of the herd is great because each cow—and cows form the main part of the herd—gives birth normally to one calf each year, there are yet certain factors that limit the rapid increase of the stock. Thieves destroy a certain number, also beasts of prey, especially the wolf and the wolverine. Reindeer also

suffer from many diseases, most of them incurable. Then, too, hunger kills large numbers in some years, if the autumn snow becomes slush which then freezes and covers the lichen so deeply that the deer cannot scrape it out with his hoofs. Then people cut down bearded pine (*Usnea barbata*) and spruce trees for their animals to eat. Further an unexpectedly severe second winter can kill many very young calves. Thus it is not surprising that many a reindeer-rich man has become poor in a few years and must begin to rebuild his position or to become a fisher or settler. On the other hand there are many examples of an indigent herdsman, through his industry and good fortune, gradually collecting a large herd.

In olden times frontiers were no hindrance in the Lapps' annual migrations required by the tending of the reindeer. Thus in 1751, when the present boundary between Norway and Swedish-Finland was determined, the Lapps were—according to ancient custom—allowed to be on both sides of Kölen and the Teno (Tana) River. In 1826, when settling the frontiers of Russia, Finland, and Norway, the Norwegian Lapps reserved the right of pasturing their herds on the Finnish areas, and similarly the population of Inari and Utsjoki might—according to ancient rights—practise sea-fishing and tend their deer during the summer on the Norwegian side. After several alterations in these arrangements, however, the Finnish frontier was closed to the Norwegian Lapps, and then Norway refused to allow Finnish citizens the right to pasture and fish in Finnmark. One result of this sealing of the frontiers was that in the years 1853-71 a number of Norwegian Lapps owning 20,000 deer moved over from Kautokeino to Swedish Lappmark because of the poor winter pasture; and because they had become Swedish subjects, they could still keep their herds on the Finnish side, in Enontekiö. In 1889 Finland's frontier was closed to the Swedish deer also, and in this way the Lapps of Tornio lost the right granted to them in 1809 when the former district of Enontekiö was divided between the two countries.

HUNTING

The wild reindeer was the most important object of hunting in olden times. Only in summer was there no hunting, for then the skin was valueless and the flesh poor. In autumn they were hunted in the mountains by individuals, but in winter in the woods by the Lapps of a village as a team. The deer were caught in many different ways: by means of traps, pits, or in fences provided with snares, by shooting them from an ambush, or by tiring them out by pursuit on skis. The pits were dug on lichen heaths, on narrow strips of land between the lakes, and on the highest parts of the mountain valleys where the wild reindeer

were in the habit of wandering. The pits were usually dug in a row; sharp-pointed poles were stuck upright in the bottom; the opening of the pit was covered with small branches, twigs, and peat to mislead the animals. Old, collapsing pit-traps are still met with everywhere in Lapland and in north Finland—for example, in Inari by the thousand. Pits were dug with wooden spades and blunt axes which meant an enormous amount of work. Trapping-fences were as much as ten to twenty kilometers long and very primitively made of stumps of trees and felled trunks. Openings were left in them at distances of 60 to 90 feet, and these openings, which could number as many as 200 to 300, were provided with rope snares or bows that automatically released spears. During early spring the hunters approached the herd of wild deer driving reindeer and shooting with guns. In the autumn they hunted them in the mountain forests with dogs. On the snow-free ground the hunters usually transported their goods by means of pack-reindeer, and advancing behind these it was easy to get near the wild deer, especially in autumn as the bulls were then willing to approach the caravan. Sometimes it was possible to use as a decoy a reindeer cow fastened to a tree, when the attracted bull would be captured with a lasso. It is also related that a snare was sometimes tied to the horns of this cow, and in it the excited bull became entangled and was easily captured.

In winter the hunters pursued the deer on skis over the deep snow in the woods, holding in the right hand a spear used as a staff, and in the left a bow on the lower end of which was a disc to prevent it from sinking into the snow. This developed into the use of two staffs when skiing: these are reported to have been in use in 1615 among the Finns of Oulu (Uleaborg), and before 1700 among the Lapps and Finns of Tornio. When there was deep snow in the forest, the wild deer's grazing-ground (sometimes a quite large area) was surrounded. Snares were stretched between the trees, and the animals driven into them, men being on the watch. Sometimes they also felled trees to make a fence. Sometimes, especially in autumn, a corner—a funnel-shaped area [chute]—was fenced off to be used by the village team hunting together. Its sides were five to ten kilometers long, the opening ten kilometers broad; the area chosen was level moss surface, marsh, and also hills. The first part of the fence was open and low on a treeless part, and consisted only of upright poles to which were fastened "something black and terrifying" (probably peat or rags). As the angle narrowed the fence became closer and higher. The herd of wild deer, sometimes rather numerous, was driven into the area with the help of dogs and a line of people. At the end was a deep, large pit, or a stepped slope also surrounded by a fence: there the animals were killed by means of arrows and large stones.

The Skolt Lapps hunt elk in early spring when the snow surface is hard enough to bear the skiers but not the elk which sink through it and so injure their haunches. The bear is usually surrounded and shot in its hibernating den. Formerly it was killed with axes and spears. In early spring the bear is hunted with dogs; if there is a long period of thaw the roof of the den begins to leak, the bear gets wet and comes out. In east Lapland bears were also captured by means of a trap of logs, ten of which had to form the falling roof in order to kill the animal. At present wolves are caught mostly with poison and trap-guns. The Reindeer Lapps, who hate wolves especially because they injure the herds, hunt them on skis in deep snow in the woods. Sometimes the horrid beast, worn out with several days' puruit, is killed with spear or ski-stick; more rarely it is caught with a lasso. It is said that sometimes the embittered Lapp skins a wolf alive and then sets it free hoping that this will frighten its fellows into avoiding that district forever. The wolverine is caught with spears, trap-guns, and other traps, foxes chiefly with poison. Sometimes its cubs are caught and fed till the following winter when the skin will be fit for use.

The "fox stump" is a tree stump about six feet high with one or two cuts in the upper end. This was formerly very commonly employed. When the animal tried to get at the bait its paws were caught in the cuts. The marten is hunted by men on skis following its tracks till it is surprised asleep and shot. If it hides in a hole, it is smoked out and dogs are set on it. The Lapps of Inari and the Skolts surrounded a marten den with a net. The squirrel is shot; in low-wooded hills it is also killed with a switch at the end of which a sharp iron spike is fastened. The ermine is caught in a trap made of a cleft stump. The hare is hunted only for the sake of its skin, which is used to line the trough-like baby's leather-covered cradle. It is shot, or caught by means of a snare fixed to a sapling lightly fastened to the ground at the one end. By putting his head in the snare he releases that end and the sapling springs back with the animal hanging on to it.

To catch otter, spring traps [metal jump traps] are laid in small streams; or a frozen river is dammed at one place and then the animal must come onto the bank from a hole and thus falls a prey to the dogs and men. The beaver died out about 1850, but when they were hunted—from the beginning of winter until Christmas—the whole of the Lapp village took part. In olden times a large part of the taxes was paid in beaver skins, and that is why they have died out. The beaver was caught in the same way as the otter, but more usually with a kind of trap made of tree stumps stuck in the bottom of a stream and baited with a chunk of aspen (the animals were always very greedy for aspen bark);

the entrance to the trap was very small. In this way the animal was drowned under the ice.

The wild birds caught are the capercailzie [grouse] and especially the ptarmigan. To catch them snares are laid surrounded by fences of young birch and pine. Capercailzie can also be caught in open snares placed in cone-shaped little shelters at the roots of fallen fir-trees where there is sand on which the birds can rest. In the spring they are also shot when they collect at mating-time: to such places a great many birds come, both cocks and hens, but the latter are usually spared. Water birds, especially geese and swans, are shot in the spring on ice-free patches in the river. Spring traps are sometimes sunk in the rivers and lakes so deep that they touch the bottom and the birds get caught in them when they eat the weeds down there. Formerly the Skolt Lapps hunted birds very industriously.

In early spring the Lapps drove in a little boat drawn by a deer on the hard snow surface, and then they did not hesitate to drive anywhere, even over open streams.

As late as the seventeenth century the Lapps used hand-bows about six feet long, made of splints of pine and birch fixed together with fish glue and bound round with birchbark in the same way as among the Finno-Ugrian peoples in general. This form of bow is said to be derived from the Turko-Tartar-Chinese compound bow, which was unknown to the people of western Europe.

FISHING

The tackle used in fishing is the most primitive of hooks made of juniper wood with a line of pine roots; with this burbot are caught during the cold season. Further, a pole-net of thin birch branches is also used, a kind of box-shaped cage and also very simple dams are set up in little streams and brooks, especially in fishing for trout and grayling. Fish-spearing by night with a fork-like instrument by the light from logs burning in the fore of the boat is mentioned as early as the eighteenth century. The method is used in the rivers of Enontekiö and Utsjoki, although it is now forbidden by law. Burbot are caught in early spring when the ice is transparent, by raining hard blows on the ice with a heavy stick or an axehead. On the other hand angling, or fishing with a rod and line, is a comparatively late method, perhaps with the exception of line fishing without a rod for cod in the sea. The most important fishing tackle at the present time and since the seventeenth century is, however, with net and seine. The former is usually about one hundred and twenty feet long, the top edge of which is strengthened with pine roots and has birch-bark floats, while sinking-stones at

the lower edge are cased in birchbark. The seine is made up of several nets: the middle part is keel-shaped with its upper and lower edges reinforced with root ropes. The sinkers are covered with birchbark, but the floats are of dry pine and are placed upright in the middle, but lying down at the sides. The edges and the long draw-ropes at both ends are of roots, which are lighter and more resistant to water than hemp rope. Formerly the seine was three hundred and sixty feet long; now it can be up to six hundred feet long. The Skolts of the coast had a peculiar salmon seine of East Karelian origin which was sunk at the edge of the water in a wide curve, one end being fastened on the shore and the other end being drawn with a rope to the shore when a school of salmon swam into the seine. Up to the present the seine was made of bought hemp spun at home—earlier with a distaff, later with a spinning wheel (the former is still used by the Skolt women). The meshes of the net are tied with three different knots for different purposes: the smallest mesh is the breadth of a finger (in the keel part of the seine), then they increase to two, three, and four finger-breadths, a hand's-breadth, and finally a hand's-breadth plus a thumb's breadth (in the salmon net). The net is dyed with a decoction of birch-root bark, ashes, black-brown tree-mushrooms, and water.

In the spring, fishing with nets begins immediately after the ice breaks up and continues until June, and then from the beginning of August until the beginning of winter. The seine is mostly used during the warmest season, for then the fish avoid the net. In large areas of water two to fifteen nets are fastened together, and when the pike approach the grassy shore to sun themselves, a strong net is thrown out along the shore and by splashing the water the fish are driven into it. Formerly, in certain rivers, floating nets without stone sinkers were used; in these especially the salmon (*Salmo salar* and *S. eriox*) were caught. At the present time such nets are prohibited by law as they injure the stock of fish. Ice-fishing with net and seine is also mentioned as early as the seventeenth century.

The Lapps' fishing differs from that of the Finns mostly in that they do not use kiddles [weirs] (Finn: *katiska*) or stake-fences, i.e. fences of slats stuck close together upright in the bed of the water. On the other hand the Lapps who live on the other side of the Teno (Tana) and Utsjoki Rivers have salmon-dams, the models for which they have taken to some extent from the Finns sent out to the Teno River (and the Alten River in Finnmark) by the government to carry on profitable salmon-fishing. The Skolt Lapps have also had such dams at Bloris-Gleb (at the mouth of the Patsjoki or Pasvik River) and at Tulomanköngäs in Nuortijärvi (Padun in Notozero), at the latter place as early as the sixteenth century. There the Skolts of Nuortijärvi and

Suonikylä fished together until the year 1920. The salmon dams of the Skolt Lapps are, to judge from the terminology, of Russian origin. Finally it should be mentioned that Britishers, first the Scots, have been coming for fly-fishing in the Teno River since 1852 and somewhat later (1874) in Boris-Gleb; from them the Lapps learnt to use this method. The terminology proves that primitive dam- and net-fishing (also under the ice) existed among the Lapps in ancient times.

Pearl-fishing has existed in some places since the seventeenth century, mostly in the River Lutto and its tributaries in Inari and Petsamo. It takes place about midsummer. The easiest method is to wade out into the shallow water and pick up the mussels in the hands; in deeper waters a man must dive. The Skolts have learnt from the East Karelians a method of using a float of logs. In it a peep-hole is made into which a birch-bark cylinder is put, and through it one can see clearly to a depth of twelve to eighteen feet. The mussels, which at good places lie as close together as possible, are lifted on to the float with a net at the end of a pole.

FOODS

The most important articles in the housekeeping of the Lapps are the products of the reindeer. Its meat, fat, marrow, blood, and also milk are their food, though this last is not used by the Skolts. An average-sized family requires a herd of at least three hundred reindeer if they are to live mainly on their products. The deer are slaughtered generally from autumn to early spring, the slaughter beginning generally in early September when the hair is long enough for ordinary skin clothes. The first to be killed are young bulls of six to eighteen months old, their skins being then most suitable for dresses. The small amount of meat thus obtained is consumed comparatively soon. After that they begin to kill full-grown bulls, about the end of September, before the rutting-time. The cows are always spared, as they are necessary for the increase of the herd. Then the slaughtering continues as meat is required during the winter and until April, when the meat begins to be far too lean. The Reindeer Lapps have their most important slaughter at New Year when the animals are fattest and their hair thickest. The products then obtained are saved for the summer. A large family will slaughter as many as ten deer. The flesh is preserved, covered up in a *kēres* (sledge), until about March 20th when it is cut into thin pieces and, slightly salted, hung up to dry in the sun and wind for about three weeks, usually near the spring dwelling-places. Formerly no salt was used. The meat loses about two-thirds of its weight, and is then very concentrated food. The legs, neck, back, and head are eaten fresh. The Skolt Lapps, who generally own but a few deer, do not dry the meat, except for some who formerly stole deer for profit, especially those belonging to the

people of Inari and Sodankylä. Dried meat is only used as food in summer, especially on journeys and when there is a lack of fish. They also dry the stomach fat packed into the rennet-stomach of the deer.

The blood is very carefully preserved. What is not consumed at the meals after the slaughtering is poured into a cleaned first stomach which is allowed to freeze. The Reindeer Lapps also dry stomachs filled with blood in the spring. Sausages and "meat-balls" are made of blood mixed with rye meal. The Skolts make a kind of pudding with rye flour and blood in the stomach of the deer, which is boiled whole. The tibia and fibula are boiled for some minutes, split with the blow of a large knife, and the marrow eaten as a great delicacy. Tasty and easily boiled parts of the carcase are chosen for the first meal after the slaughtering.

Among the Lapps it is the husband who looks after the preparation of food, at least as far as meat is concerned. This is due to the old idea that the woman is unclean and must not touch game. Yet this attitude has become less important in our day, especially among the eastern Lapps and the settlers. In the mornings and throughout the day, cold and dry food is generally eaten. The chief meal, with plenty of boiled meat (or fish), is eaten late in the evening, often about midnight, and after that they sleep until late into the day.

The greater part of the products of the slaughtering are eaten without making any special choice, but there are some definite rules of sharing with regard to certain parts of the reindeer's carcase. These are certainly not observed all over the Lapps' areas but are so numerous that they must be ancient. In spite of the fact that with time these rules have been changed in different places and their meaning has often become obscure, it can be noted that their function is mainly to observe and emphasize the relations between the members of the family.

Another kind of food which is always a welcome change in the Lapp's monotonous diet is such game as is considered clean. Mammals regarded as edible are wild reindeer (already extinct), elk, squirrel, beaver (extinct), in some places also bear, hare, otter, seal, even in times of severe famine also fox and wolverine, but never wolf. The bear is skinned, then carried home and boiled under special rites, which are remembered far less in Finnish than in Swedish Lappmark. The Skolts, like other Starovery ("Old Believers," orthodox) do not eat bear meat, though the inhabitants of Inari consider that is because the Skolts believe they are descended from bears.

The most important bird is the ptarmigan or white grouse, because it provides the poor people with food and especially with an object of trade: a professional hunter can kill as many as 1000-2000 ptarmigan in a good year. In former

times the capercailzie in the pine forests were a very profitable booty. (The water birds have been described in connection with hunting.) Water birds' eggs used to be collected on a large scale on the Petsamo coast. Inland nesting-boxes (a small hollow log with a hole) are hung in the trees for garrot and merganser, which are to be seen everywhere in Lappland on the shores near dwellings. (Such nesting-boxes are also seen in north Finland, southeast Karelia, and on the islands of southwest Finland.)

Milk production economy was not associated with the earliest reindeer-breeding: to this very day it is unknown on the Kola peninsula and among most of the Skolts. Judging from some ways of treating milk and many of the terms relating to milking the practice began with the nomads of Scandinavia in imitation of the cattle-rearing, more civilized neighbors. The summer food of the Reindeer Lapps was of old mainly milk and cheese. In olden days the milking seems to have been chiefly done by the men; nowadays it is more and more done by the women. A reindeer cow will give rather little milk, perhaps only a cupful at a time, but it has much fat. (The percentage of fat is four to five times greater than that of cow's milk.) A small amount of it is taken fresh in the coffee, and for this purpose it is frozen in the autumn to keep it for use in winter. The greater part of the milk is used for making cake-shaped cheeses which are rather pungent to the taste but especially nourishing, and are kept dried a long time. Small pieces of this cheese are mixed with coffee instead of cream. Sometimes butter is also made from the milk by packing it into a deer's stomach or a cup. Towards autumn, when the weather is colder, the Reindeer Lapps dry milk curdled with rennet in a fourth stomach under the smoke hole of the cloth tent to be used as "coffee-cream" in the winter.

Those Lapps who have few or no reindeer live chiefly on fish in summer, when the Reindeer Lapps also fish if they have opportunity. The most important fish in the lakes are whitefish, and then bleak, then grayling, fresh-water salmon, and trout, and, when better kinds are lacking, pike, perch, and in winter burbot. Carp, ide, roach, smelt, and pike-perch are not found in the true Lappish districts. Salmon is the most important fish at the coast and in the rivers, but in the sea flounder, halibut, cod, haddock, sej (*Gadus virens*, a kind of cod), and herring are caught in large quantities. They prepare the fish by boiling fresh, or, when traveling, by roasting it in the flame, held in a split wooden stick. For preserving fish are generally dried. The better kinds, such as salmon and whitefish, are even salted, though often so slightly that they become sour and smell; the Laps are fond of such food like so many other primitive peoples. The drying of fish was

formerly so important in Inari that the summer dwellings were if possible built on a rocky shore where the heat was greatest and most even.

Vegetables are used as a welcome change in the diet. Among the fishing Lapps of Inari and Petsamo the white inner layer of pine bark was used instead of grain and was not so unusual even twenty years ago. It was boiled and cut into small pieces; then placed in fish or meat soup or dried at the fire, crushed, and eaten mixed with fish fat as a second course. In the hilly districts peeled *Angelica* stems are eaten either alone or with reindeer milk. Other plants mixed in milk are *Rumex, Oxyria, Mulgedium;* in some places also wild *Allium* and *Cochlearia.* In the late summer the vegetarian diet is more varied, when berries ripen; some of them are larger and juicier in Lapland than in the south. These too are mixed in milk, and also with boiled fish and roe. Crowberries and cloudberries are the most important. In the winter time the hunters roast the squirrel stomachs with their undigested spruce and pine seeds.

The Lapps have used bought rye flour for at least three hundred and fifty years, although up to the present in rather small quantities. At first they only made gruel and porridge. Later they began to bake thin cakes without any acidity. They were baked every day on a flat stone in the fire. The settlers and also the Skolt Lapps can bake ordinary bread, and the latter often have a little oven in the open air.

TRANSPORTATION

The Lapps' modes of transport can be divided into those used when the ground is bare of snow and those used in winter. The simplest way of crossing rivers and when fishing in the forest lakes is a little raft made of two to four logs (preferably of dried fir) with two cross-bars. Logs hollowed out of a stout trunk do not seem to have been used by the Lapps in recent centuries, but it is probable that their forefathers used some of the hollowed logs which have been found so widespread in the marshes and lake bottoms of central and east Finland. A thousand years ago the Lapps made real boats with a low keel and boards at the sides, bound together as if sewn with roots. As recently as the nineteenth century there were to be seen boats so light that a man could carry one upside down on his head for long distances, for example, alongside rapids or from one lake to another. At the turn of the century the Skolt Lapps were still using boats bound together with hemp. The eastern Lapps have rather small boats especially suitable for lake traffic, which resemble somewhat the oldest type of the Karelians. The Lapps are not lacking in courage in negotiating the rapids, but they generally turn the boat so that the stern points downstream and row with all their might

against the stream to reduce the speed. In the Teno River system long narrow boats are used, rather like the types in the rivers of north Finland. They are driven forward chiefly by poling, especially when moving against the current. The boats of the eastern Lapps are about sixteen to twenty feet, those of the River Teno twenty-four to twenty-eight feet long.

If in summer the water-ways cannot be used, the Lapp must go on foot. He easily covers forty to fifty km in a day, even seventy to eighty if it is necessary. He can carry up to forty or fifty kg for long distances, although seventeen kg has been the "legal load" from very old times. The Reindeer Lapps carry a long staff when walking. Goods are carried in a leather sack or knapsack on the back, among the Skolts usually in a bow-shaped container of north Russian type. The mothers carry their babies in a trough-shaped, leather-covered kind of cradle hanging on the back from a strap passed over the shoulders. Heavier loads are carried on the bull reindeer's back on a pack-saddle of two curved poles whose ends are bound together under the belly. Below the pack-saddle is placed a folded deerskin, a mosquito tent, or a woollen cover. The goods are placed in two oval or round boxes of thin birch slats bent and bound (the eastern Lapps used also a leather bag), one on each side hanging from the two points of the saddle. In such a box without a lid it is possible for children under five to travel in a sitting position. The reindeer's load must not exceed twenty-five to thirty-five kg (in warm weather less than in cold).

After the snow has fallen traveling is easy. The Lapps appear to have used skis from very ancient times, judging from the many finds in the bogs of north and central Finland. The type of skis of unequal length mentioned in Kemi Lappmark in the seventeenth century had a long, hollow gliding ski of pine or spruce for the left foot and a short kicking ski with skin on the bottom for the right foot. It is probable that the old Germanic name for the Lapps—*Skrithi* or *Skricfinn*—derives from this method of traveling. At the present time the skis of the Finnish Lapps are always alike in length, but in general those of the reindeer-breeders are longer and narrower than those of the fishers (their length varies from place to place, between six and ten feet). Formerly skies were often made of pine wood, now of birch, except among the Skolts, who make theirs of any fir wood and cover the bottom with sealskin. Until the present day skis have had no bottom groove except in Enontekiö, where the Lapps used almost the same kind of long skis as the Finns in Tornio valley. When skiing the Lapps have usually only one staff. The Reindeer Lapps also travel on skis while drawn by reindeer.

The most primitive means of conveying goods is a kind of skin sledge used at times by the Reindeer Lapps. The load is laid on deer- or sealskins and the

edges drawn together with rope threaded through holes. The deer is harnessed in front of this "*akja*,"[2] the thick hair of which enables it to glide fairly easily along the snow. The prototype of the real *akja* (sled) has perhaps been a kind of trough hollowed out of a log. The hunters of north Finland and Karelia had quite recently small light akjas which they drew themselves. These were provided with a kind of keel below and some boards at the side. The bottom boards of such akjas have been found in bogs and marshes all over the country, even in the south. Strangely enough we have no knowledge, either current or old, that the Lapps used such devices as hunting sledges, but there must be some connection between this type and the reindeer akja.

The ordinary akja, common everywhere, has, like the boat, a rather broad keel, several side boards (three or four on each side), and ribs with wooden pegs, and it has probably developed side by side with the boat in the north during the Iron Age. The driving sledge or *pulki* is narrower and more elegant than the goods-sledge and has a high back support, while the latter is usually open at the back. As recently as about ninety years ago the driving akja had a cover of wood and sealskin on the front part, under which the driver put his feet. A special kind of akja for goods has a wooden cover for its full length, part of which can be opened. On such sledges better things are kept during the journey. The deer draws the akja by means of a strap passing between the legs and having a wide loop at the end which is placed on its neck in front of the withers. Now wooden collars are used almost exclusively, and these the Finns of Lapland have copied from the collar of a horse. The driving deer is held by a leather rein attached to the right hand of the driver sitting in the akja, and runs to the neck of the deer, where it is joined to a bit-less bridle. For traveling to the market or when the family moves, a *raidu* or reindeer caravan is formed, in which the animals—ten or twelve in number—follow each other so the reins of each are tied to the akja in front. At the end are one to three deer without an akja, and it is their task to check the speed in going down hill and to be draught-animals when any of the others are tired. The weight carried by each sledge is about one hundred kilograms.

Judging from some finds of sledge-runners from the Bronze and Iron Ages in north Finland and north Sweden, and which still have counterparts among some Siberian peoples, it appears that the Lapps formerly had light sledges drawn by dogs or by one or two dogs and the hunter himself. The sledges were far too fragile for reindeer, then probably much wilder than today. It is tempting to assume that the akja was invented just for reindeer when trained as draught

2 On pages 51 and 52 read the Lapp word *kēres* for *akja*, the Finnish-Swedish word [Editor].

animals. The Lapps began to use sledges again about one hundred to one hundred and fifty years ago for the transport of loads. In Enontekiö such sledges were of Scandinavian type with a low front: they are not used any more. In other regions the Finnish sledge with a high front has now displaced the akja in some places. About fifty or sixty years ago the Skolts began to use the *narta,* a reindeer sledge they acquired from the Zyryans and Samoyed when some of these people moved with their herds to the Kola Peninsula in the 1880's. The Skolts like to drive in the narta, which is drawn by two to four deer, but usually transport loads in akjas.

BUILDINGS

The buildings of the Lapps are very simple. The reindeer breeders and the trappers use as a temporary shelter from rain and wind a kind of half tent of sailcloth or sacking, the framework consisting of three poles placed cone-wise with forked ends at the top, and with other thinner poles in between. A fire is lighted on the open side; if the cold is very great even a log-fire. The tent can also be made with more poles: this too is cone-shaped, and then the fire is in the middle of the tent. The nomadic family's dwelling (*koatti*) resembles the latter very much. In summer it is covered with sailcloth or sacking, in winter with thick woollen cloths which are now woven by the Finnmark Lapps and sewn together, making two large cloths, one to cover each half of the koatti. The framework consists of two pairs of poles, bent outward, the tops being fastened in pairs and connected above with a horizontal pole, and half way down with two ridge poles, also horizontal. At each end of the top horizontal pole is an inward sloping support with a forked top, and round the framework twelve or thirteen straight poles are set up in conical form. In this way the framework makes the upper part of the koatti more roomy. The door, consisting of a piece of cloth, is placed towards the south or east. It hangs from one supporting pole and one straight pole. The floor is the bare earth, but at the sides it is covered with birch twigs and skins. In the middle is the fire on a low hearth of stones, and the smoke rises through a hole in the top of the koatti. At the back opposite the door the food, pots, and pans are kept on twigs. The cooking-pot hangs above the fireplace, suspended from the pole. The people sit and sleep on reindeer skins on both sides of the hearth, the dogs between them and the door, and in the evening firewood is collected and heaped between the door and the hearth. Two people can put up and take down the koatti in half an hour. In winter, when they come to the spot where they will put up their koattis, they first sweep the snow away; the stones for the hearth are carried in the kēres.

As recently as a few decades ago the Lapps in northwest Inari and in the

Petsamo district built permanent koattis that resembled these here described, but instead of covering them with cloth, the walls were made of whole or split tree trunks upon which there was a layer of pine or spruce bark, with peat above that. The floor was circular or among the Skolts hexagonal, a shape that corresponded to the framework of the cloth-tent (the four bent poles and the two supports with forked ends were at the door and the back). The floor was divided by two boards passing from the door-posts past the two sides of the hearth to the back part of the tent: this divided it into three parts, and the boards crossing in the opposite direction again divided it into three parts, so that the whole floor had nine divisions. The first division of the middle part was at the door, the second contained the hearth, and the third, at the back, was the place for the water and the cooking vessels. The side divisions included the corner by the door, the place for sitting and sleeping, and the back corner. The door was usually double and made of thin boards "planed" with a knife, not sawn. As the permanent koatti improved, it had a hexagonal floor of worked logs; others were four- or eight-sided. In the eighteenth century the hexagonal shape was to be found in Kemi Lapland, but the Lapps of Inari used the square shape apparently as early as the sixteenth century, judging from the old outlines in their former winter villages. In these six to fourteen koatti were built in a row along the shore.

The half-nomadic Fishing Lapps, from the 1750's onward, sometimes built simple wooden huts for the winter. Earlier the structure resembled a koatti to some extent: the floor was often the bare earth and the intermediate roof was lacking. Nowadays most of the Finnish Lapps—even some of the nomads—live in wooden huts which are rather small and have no stone foundation: the floor is laid on low mounds of earth or sand for warmth, and these are also heaped on the outside. There are one or two windows, and a stone stove without a damper in one of the door corners. These huts are very simply furnished. The Skolts have the bare earth as a floor at the side walls where the stove stands, and this corresponds to the back part of the koatti in so far as the cooking-vessels are kept there. The cattle-breeding and farming Lapps have one to three rooms, with a baking oven in one.

The Lapps have many kinds of simple stands and outhouses in which to keep their food and other necessaries. The most primitive is the branch of a tree on which meat or fish is hung to dry. In the eastern area there are also to be seen near a dwelling low pines of which the broken branches are two to four feet long. A little more developed is an arrangement of three branched poles placed together cone-wise. The slaughtered animal's flesh is hung at the top and in the branches. If more animals are killed, a second or a third similar erection can be combined

with a crossbar for hanging the meat. Three such erections can be placed on a triangular surface and four on a square. If some thin tree trunks or some inverted kēres are laid across two such structures a kind of roof is formed. At times this is so high that a simple kind of ladder is needed to climb on to it. The householder keeps his hay on such an scaffold both near his koatti and in the field, so that the reindeer cannot get at it in the autumn and winter. Still more developed is a rectangular construction: two poles with forked tops are bound together, and two of these pairs are joined by means of a ridge pole; then the whole thing has a roof which reaches from the ridge to halfway down both sides of the poles. The roof is usually of birch bark or fir bark, and beneath it is another thin pole from which are hung meat, fish, nets, harness, and similar things.

The Skolt Lapps had beside their dwellings a kind of tray placed on the top of a low pine stump, on which to keep their goods that had to be preserved from dogs and sheep. In the woods they made similar erections about six to eight feet high, but with a cover or square lid. On this are laid split tree stumps and on them again heavy logs or stones to prevent the wolverine or bear getting at the reindeer meat placed there in the late autumn to be taken home when the snow has fallen. Often such affairs are better built; for example, a small larder about three to four feet high with a roof and a door, placed upon poles ten to twelve feet high. Such larders were quite general up to the present in the woods and on the islands of Suonikylä, but also near their summer dwellings, and in them are kept game, dried fish, and leather winter clothes. In former times in Inari such store-houses were set on a very high pole near a place where the reindeer fence with snares ended; the snares were kept in the store-house from midwinter till autumn. The reindeer hunters also put up small square wooden structures on the ground, covered with logs, and laid heavy stones on top. In the autumn, before the ground was frozen, pits were dug to be lined with stones and twigs, or, if a better cellar was needed, with boards. The meat was covered with bark or branches and finally with big stones. The fish cellar among the Skolts is often like a little koatti as high as a man, with four straight supporting poles; the walls are of boards and covered with peat. In this the salted fish is kept in vessels. Such a koatti is also made for sheep but, of course, with no opening in the roof. The sheepfold among the Skolts and Inari Lapps can also be a little square wooden hut with a door, the roof of which is flat or sloping. The most complete among these storage-houses is the larder of the Fisher Lapps, which is always built on four poles, fifty to one hundred centimeters high, some of which are still rooted in the earth, while others are made from pine stumps brought to the spot. The poles are joined to the sidewalls with rafters. The walls are of

seven to ten logs on top of each other, with a sloping roof of boards, formerly of spars and the bark of fir trees. In these a floor of thin tree trunks or usually of split boards is laid.

The furnishing of the koatti is extremely simple. At the wall there are some oval boxes with convex lids in which small and valuable objects are kept. In such a box with a lock a rich Reindeer Lapp might have several thousand marks or Scandinavian crowns in silver. In the log hut there are generally one or two simple chests, fir tree stumps used as seats, a primitive table nailed to the back wall under the window, and a few fixed sleeping bunks. Bags and purses of different sizes are used for keeping certain foods, such as sugar, salt, and flour. They are made of tanned reindeer skin, leg-skin still covered with hair, or the whole skin of a loon. The largest leather bags are used as rucksacks when traveling and are provided with leather shoulder straps. The women have handwork bags; in east Lappmark they are sewn together with narrow decorative black and white sheep leg-skin strips—a kind of leather "plastic"—and have beautifully engraved openings of reindeer horn. Ever since the eighteenth century these have passed from mother to daughter (like the horn spoons, which, however, are not found among the Skolts).

UTENSILS

Birch bark is very extensively used in making vessels and baskets, especially in the east. The Skolt Lapps and those in Inari make four or five kinds of bark containers, small and large (even to two feet long or high), square, oval, round, flat, and cylinder-shaped with the gold-brown side either inwards or outwards and with or without a handle or lid. Water, berries, fish, roes, wool, etc., are kept in these. Formerly when traveling the Skolts used to lay cooked meat and fish on a double layer of bark which was formed of four or six pieces connected by strips of leather and then could be folded two or three times. Such wrappings were also used in Swedish Lappmark in the seventeenth and eighteenth centuries. In some areas the Lapps also make small round or flat boxes with a bottom and a lid of birch bark in the same way as the Finns, and use them for salt. Small baskets of thin pine or spruce roots boiled in lye were formerly made by the women in Tornio and Kemi Lappmark, but now these are known only among the Skolts.

The cooking-pot in ancient times seems to have been a clay vessel, judging from an Iron Age find in south Varanger. The pots and copper kettles used later have, of course, always been bought goods. The meat was taken from the cooking-pots with a pointed stick, but the fish with a long-handled wooden ladle. A short-handled ladle of curly birch is used for drinking. The Reindeer Lapps

have also old-fashioned brandy cups of silver, often in Renaissance or Baroque shape made (like old-fashioned silver-spoons) by the goldsmiths of the northern towns according to the artistic ideas of the Lapps. Trough-like bowls of birch for the food are of different shapes and sizes, usually rectangular with square or rounded ends, but among the Skolts they are also half-moon shaped with blunted points, some deeper, some shallower. At meal-times the pieces of meat or fish are laid in a common bowl. Round curly-birch dishes are also used for the same purpose and also when baking bread. In east Lapland tools of reindeer horn can still be seen, and with these they peel and work pine bark. The bark is lifted from the tree with a broad-bladed chisel and with a smaller one, rather like a two-edged knife; the inner part is removed, and this is crushed when dried on the inside of a deerskin with a stamping tool which has two blades of horn on the lower end of a wooden handle.

CLOTHING

A great many of the Lapps still wear their old style clothes, which seem to be connected with older Finnish and Scandinavian costumes. In general it can be said that what is specialized has been best preserved in the skin and leather clothing. The reindeer skin garment is generally in the shape of a smock that has only a short opening in front, has the hair on the outside, and reaches to the knee or a little below. It is made of five reindeer calfskins (animals three to four months old), so that one skin forms the front, another the back, and from the other three are cut the sleeves, the collar, and a gore for each side from beneath the sleeve to the hem.

In winter the Reindeer Lapps wear under this fur coat, instead of the shirt and frock, a similar but smaller fur coat with the hair on the inside. But others have, ever since the 1850's, used cloth shirts, and from time immemorial long shirt-shaped smocks of gray, black, or white homespun, later also of blue or black broadcloth with gaily-colored decorative bands in summer, and over this the fur coat is worn out-of-doors in winter. The women especially have also had sheepskin coats without another coat, with the wool inside. The frock of the Skolt Lapps is the most primitive—cut like a poncho; the front and back are in one piece of homespun (the men's gray, the women's white), with an opening in the middle for the head. Sometimes the sleeves are also one piece with the front and back, and the seams at the sides under the arms are sewn with or without gores. About forty to fifty years ago other Lapps had another garment of the poncho type: on their winter journeys the men wore outside on their shoulders an oval piece of bearskin with an opening in the middle for the head.

Now that has been replaced by a garment of broadcloth covering the upper part of the body and having a hood. The trousers are tight, the upper part low and fastened at the hips with a cord inside the band, and made of homespun or broadcloth of the same color as the smock. The Skolt women and those of Inari did not wear trousers formerly but long homespun gaiters reaching to the knee. In the summer reindeer skin or sealskin shoes are worn, in winter shoes of reindeer head-skin or leg-skin; the Skolts make boots of the leg-skin of the elk. The toes of the shoe are raised—possibly to facilitate the tying on of the skis—and the upper reaches a little above the ankle where it is bound round with a long, decorated woollen band. Instead of stockings they use reeds or rushes. These are cut in masses with a little scythe or even a long knife in the osier thickets in the late summer, wound into large rings weighing ten to fifteen kilograms and kept dried. The Fishing Lapps, especially the Skolts, now generally wear woollen stockings, usually with hay in the shoes. In chilly or rainy weather they draw long leather leggings over their breeches, half way up the thigh, and the lower end is bound round the top of the shoe with the woollen band mentioned above so tightly that they can wade in water without the legs getting wet. In the winter the leggings are made of the leg-skin, and the Reindeer Lapps sew on to them short leather breeches which are drawn over the cloth trousers. We can assume that these short leather breeches are genuine Lappish and originated in a special covering for the genitals, of the so-called "breechcloth" type. On the hands they wear thick woollen mittens both in spring and autumn, also in winter when working or throwing the lasso, but they prefer gloves of leg-skin with some hay inside. The Lapps have nearly always a broad belt round the waist, of colored wool generally among the Fishers, but among the Reindeer Lapps always of cow leather with square or round brass, tin, or silver ornaments or also with rectangular, carved horn plates. The women usually have a belt similar to that of the Fishers. At a man's left side hangs a large knife in a leather, horn, or wooden sheath, while the women have their sewing materials, a bunch of sinew thread, a needle-case of brass or horn, scissors, and sewing-ring (instead of a thimble) of reindeer leather; formerly also a tinder-box in a pouch. The Lapp is very particular that the belt is in the right place, that the smock-frock or the fur coat should blouse out a little above the belt (on a man) and that the folds of the hem are straight and regular. Beside old clothes ("national costumes"), the Skolts have for more than a hundred years worn also "European" or Russian clothes, such as coats and trousers, the women again the long Russian skirt (*sarafan*) with shoulder straps. The other Lapps have also begun to wear European dress during the last few decades.

The old Lappish clothes are almost the same for both sexes, except for the headwear. The man used to wear a calotte or conical cap, in summer knitted in wool, in winter of fur so that the ears were protected from the cold. As recently as the 1880's the Lapps of Inari had knitted woollen caps and the Skolts even at the beginning of this century, but then they began to wear hats or peaked caps. More than a century ago the Varanger Lapps adopted the "four winds cap" of the Russian merchant and fisherman (the Russians had taken it from the Poles), and this new fashion spread rapidly all through Finnmark and Finnish Lapland. The people of Utsjoki and Enontekiö wear it all the year round, the winter one having a lining of otter-skin while the summer one is of cloth. The people of Inari wear it only in winter. The Skolts have had their own winter cap for a very long time, the upper part a rectangle of cloth and the long underpart of fox fur. The headwear of the Lutheran Lapp woman was formerly a cloth cap with a high arched top like an Achilles' helmet; the framework was a piece of wood skilfully hollowed out. It went out of fashion in the 1870's because it was preached against in church and the pastor called it a devil's horn. Then there was left only a rather round cloth cap with ear-flaps. When traveling the women wore a cloth garment covering the shoulders and the lower part of the head; above this a gay woollen kerchief was laid on the head and tied under the chin. The Skolt women's headgear is in the old Russian style, made usually of cloth embroidered in red and stiffened with birch bark. A girl generally wears a rather narrow cylinder without a crown; a married woman's cap has the upper part leaning over the forehead, while in that of a widow the upper part is lower and the color is dark or gray.

TECHNOLOGY

As regards the men's technical ability, they have only worked metal to a small extent. During the Bronze Age they seem to have known how to cast bronze (its name, *veäiki* or *veshki*=Finnish *vaski*, is the only genuine name for the metal), although the art was later forgotten. Then they could only cast tin and lead and make thin tin wire, and with this the women decorated clothes and harness; now even this is forgotten. From ancient times the Lapps have obtained all their iron and silver objects by trading with their southern neighbors. Not until the beginning of the last century were Lappish smiths to be found in Utsjoki and Inari who could forge simple iron objects, such as knives of different sizes, augers, hollowing tools, fishing-spears, train oil lamps, etc. A century ago the only tools a Lapp carpenter had were an axe, a knife, a drill, a little plane, and sometimes

a little knife-saw, but for all that he could produce well-made and even elegant articles.

The different kinds of wood are selected with great care: it is known exactly where good timber of pine or birch grows. They differentiate between the "male" and "female" trees, much preferring the latter for wood-working. (For birch-bark and horn as materials, see page 56.)

The Skolts and the Inari Lapps have known a very simple way of distilling tar: the so-called "wind-distilling" method. Resinous chunks of dried fir roots and tops are wrapped up in a large cornet of pine or spruce bark about six to nine feet long. This is then bound round with roots and laid on a slope so that the narrow end, under which is placed a vessel in a hole, lies lower than the other; a slight breeze blows toward the thicker end, which is set alight, and the whole is covered with peat. The distilling took from about three to twelve hours, according to the strength of the wind, the size of the cornet, and the thickness of the peat. In this way as much tar was obtained as was needed to smear some boats, akjas, and boots. Now the Lapps of Inari and Utsjoki can build proper distilling places—shallow circular pits.

The women tan reindeer leather in water in which willow bark has been boiled; then the hair is removed by being soaked in a lake or river. If the hair is to be retained, as in skin for coats and footwear, the blood membrane is scraped away with an edged tool such as is also found among the Ostiak, Vogul, Samoyed, and Chukchi. The edge is S-shaped, seldom straight, and stands out from the middle of a wooden handle about forty-five centimeters long. When the membrane has been scraped away, the back of the skin is smeared with train oil. The skin from the legs and head can also be treated with a thick "soup" of osier bark and in this way becomes fairly durable and does not get damp during thaws. Skin clothes are always sewn with thin threads torn from the dried back- and leg-sinews of the reindeer and twisted into thread with the shin or thigh as support.

SOCIAL RELATIONS

From old documents it appears that mountains, hills, a watershed, and large bogs served as boundaries between the different villages (*siida*). They often quarrelled about the boundaries, usually because of fishing sites and beaver-trapping places. The arbitrators were sometimes men from "neutral" villages. The center of the village community was the winter village, where all the Fishing and Forest Lapps collected before the turn of the year. Here the churches were later built, so that the winter villages have become the center of the present parishes. It is the Skolts who have best preserved the former style of community. They have

village meetings (*norras*)—at which all the heads of the families gather—of two kinds: one (occasional) summoned at the request of an individual, and the other (regular), once a year, at which the common affairs of the village are decided. The elder, who acts as chairman, is elected in some villages for one year, in others for three. At the meeting proclamations are read, important agreements are ratified, and affairs regarding debts, taxation, and the conveyance of travelers are settled, the population is counted, quarrels are composed, less important crimes are judged (i. e., such as have been committed against the right of using common or private areas), permission is given to adopt children—including those from another village—and changes in the dwelling and reindeer marks due to death and inheritance are confirmed. The following is related of Kemi Lapland in the eighteenth century: The oldest men divide the hunting woods and the fishing lakes, and their decision is later confirmed by the regular judge who comes to Lapland once a year. If anyone has settled or hunted on another's area he is fined as a disturber of the public peace. The elder collects the taxes every year. At the village meeting marriages are also decided. "The unanimity and authority of the elders is such that one must admire their conferences. If worse crimes are committed they are referred to the regular court but other offences are settled mostly by fines."

In olden times in Lutheran Lapland—as is still the case among the Orthodox Skolts—trapping areas and fishing waters were probably divided between the different families. There they lived when the ground was bare of snow: in summer they lived beside the fishing lakes and in the autumn near the trapping grounds. Thus each Forest Lapp had at least two, but usually three to five dwelling-places: for spring, summer, autumn, and winter, and also in the winter village. Each individual family had its private area on the land of the great family. It is related of the Enontekiö Reindeer Lapps of the eighteenth century that the koatti team [group of householders] belonging to the same *vuobmi* (valley and moss area) were not far from each other because such areas were rather small. Every village had its own area, and each family its own "taxed land" within that. In that part of Enontekiö which now belongs to Finland there were four or five such village groups. It has been assumed that the idea of special deer pastures among the Reindeer Lapps developed both under the effect of large scale reindeer-breeding and also from intercourse between the Lapps and the settlers.

In olden days, from the sixteenth to the eighteenth centuries, each family father had his own private mark which very much resembled that of the Scandinavians and Finns. Their use was discontinued last century probably because of the art of writing, but the Skolts still use them today. This mark is inherited

in such a way that the son, when forming his own home, makes a little addition to his father's mark, while the youngest son who stays at home and looks after his ageing parents, not only inherits the greater part of their property but also his father's mark unchanged. This is placed on the seine floats, boats, oars, akjas, harness, and other valuable household utensils, also on documents, and besides that on small wooden labels tied under the neck of purchased reindeer. Special ownership marks are those made in the reindeer's ear, a custom which originated in very old times. Although the earmark is known all over the Euro-Asiatic reindeer-breeding area, it must not be assumed from this that the earmarks have all a common origin. In the beginning each Lapp family had so few reindeer that a mark was scarcely necessary. In several European countries, e. g., Scandinavia and Finland, owners' marks are cut in sheeps' ears, and it is probable that the Lapps adopted this custom when their reindeer became more numerous. When a son separates from the old home he makes a little addition in the ear of the deer he receives from his father. The daughter generally inherits the mother's mark which she has brought from her home on her marriage. A herdsman can tell the earmark of a deer far away, even at fifty meters distance, and knows the marks of different people in his own district and also outside it, sometimes several hundred altogether. It follows from the primitive style of the mark that similar ones can be found in places far away from each other. In order to remember the marks they are made on birch-bark, leather, pieces of wood, beads, and paper, and the owner of the deer sometimes keeps these in bundles. The ears must be retained with the skins and furs, or else it will be suspected that the animals have been stolen.

The trade of the Lapps has until recent times been almost exclusively barter. It is known that in the sixteenth and seventeenth centuries the bailiffs and "Pirkkalaiset" (see page 34) took with them to the Lapp villages in the winter grain, salt, butter, brandy, linen, homespun, hemp, cooking-pots, axes, knives, steel bows, spear-tops, and silver ornaments, and took in return hides, skins, furs, reindeer meat, fresh and dried fish, Lappish shoes and gloves. At times for example, a red fox skin was worth 1-2 lispund (18 lbs 12 oz) of hemp or half a lispund of butter or ¼ barrel of grain or 13 yards homespun: a beaverskin equalled 1-1½ lispund butter or hemp or 4 yards cloth; an axe equalled 15 loaves or 1 lispund dried pike; 3 axes equalled 1 marten. At the present day the Finnish Lapps carry on trade mostly at the yearly winter market in their own country, but also in north Norway and north Sweden. Trading among themselves is still mostly barter. In the trade of the reindeer owners, hunters, and fishers, for example, the following "exchange rate" is common: a reindeer's tongue = a

ptarmigan; a three year-old reindeer cow = sixty ptarmigan; a draft reindeer = a driving kēres = a new tent cloth; a barren reindeer cow = a load-kēres; a two year-old reindeer cow = a pair of good birch skis; a barren cow's joint = fifteen small fish; a reindeer dog = one or two reindeer for slaughtering, etc. The wages of servants were formerly paid in skin and cloth clothes and in pregnant reindeer cows with calves, only very rarely in money.

RELIGION

Our knowledge of the mythology of the Finnish Lapps is scantier than that of those in Scandinavia. It looks as if the former did not have such well developed gods of Olympia as their kinsmen. Here were maintained those earlier beliefs of primitive character which seem to have formed the basis for the religious ideas of all the Lappish tribes. It is in vain that one seeks such names as Radienatshe, Varálden olmai, Horagalles, Stuorrajunkare, Sarakka, Uksakka, Juksakka, Rana nieida, and Rota: the dominating figures are "Thunder" and Sieidi. The former was the most powerful of the rulers of the heavens, and was known by different names (Pajan, Aijeg, Tiermes). These names indicate both the natural phenomena and their controllers. It is clear that thunder and its enormous power has aroused a reverence for the divine in primitive man all over the world, and there is scarcely any reason to assume, as has been done, that it was the Tor of the Scandinavians that gave to the Lapps the idea of a god of thunder. Yet it seems that the Lappish god of thunder has adopted some further characteristics from the worship of Tor.

The central place for the worship of thunder by the Lapps was a little rocky island in Inari Lake. There is a cave there in which some rotted wild reindeer horns were found as recently as about thirty years ago, and there was also found a silver earring from the eleventh century, probably a sacrificial gift. According to the Fisher-Lapps' tradition wild reindeer heads with horns, capercailzie, and large fish have been taken to the cave. The Reindeer Lapps call thunder the ruler of the clouds, who appears to purify the earth from disease. He rides on a white cloud, carrying on his back a bag full of arrows (lightning flashes) and in his hands two hollow objects like wooden cups which he strikes together to cause the peals of thunder. Then he sends rain to prevent the lightning from burning up the earth. The Skolts believe that all kinds of reptiles increase in the summer heat, and that is why the thunder begins to "ride" and break up the earth to destroy evil beasts. According to a saga he also pursues the devil. This idea is even to be found in the Far East, e. g. among the Goldi (Tungus) of the Ussuri River.

The sun (Peäivi) was also worshipped in olden times. The Lapps celebrated the reappearance of the sun after the midwinter darkness, and sacrificed to it at midsummer so that it should refresh creation and make the grass grow. The Reindeer Lapps in Enontekiö still make a little cake of rye and reindeer blood to be hung over the door of the cloth hut in early spring or on a birch growing nearby, as a sacrifice to the sun.

The ruler of the wind was Pieggolmai (the Wind Man), and sacrifices were made to him, e. g. on a hill near the present village of Inari. More than a hundred years ago sacrificed deer horns were to be seen there. Pieggolmai could drive away the deer by blowing for a long time from the same direction. Sometimes the Skolts used the word piegg-jenn (wind mother) of the wind, especially the south wind, in the same way as some other Finnish Ugrian peoples do.

The ruler of the water (Tshatts-olmai) was prayed to actually on midsummer night at the rapids. One stood on the bank without speaking; one must only think of what was desired, e. g. fish, beaver, money. Tshatts-olmai stated how they could be obtained, finally showed himself as a man, and then disappeared. Even today people talk about Tshattse-haldi (Undine); the Skolts know about Tshatts-jenn who resembles a woman and whose loose hair is "horsehair worms" and who protects the young of fish and waterbirds.

Maddar-akku was the goddess of the earth: the old Lapps of Sodankylä talked about her more than one hundred years ago. There she had at least two sacrificial places in the woods where there were one or two tall tree stumps beside one other. To her were offered the flesh and horns of reindeer and rams, also the flesh of birds, a piece of each on a tray or in a birchbark basket. The worshipper bared his head, bowed three times, laid his offering on a stump, and sang, kneeling: "I have come from Maddar (Earth) and come into Maddar; I have visited Maddar and shall come to Maddar-akku."

The gods described here are now almost forgotten, some of them to such a degree that most of their names are unknown. On the other hand many less important nature spirits are fairly well remembered, though no one has ever sacrificed to them. The Finnish Lapps have known in various places about sixty different spirits, who were imagined, some in the form of people, some in the form of animals. Nature was conceived as so living that each tree had its spirits. If a Lapp was going to fell a tree, he had first to strike it with his axe-head to waken the spirit, and then cut off the lowest branch and throw it aside so that the spirit could escape with it. One must not remove the peat covering of a stone, otherwise the offender will find himself without clothing some day. The Reindeer Lapps in Inari tell about the wood-sprite (meättse-haldi), the spirit of the wilds

(luodo-haldi), the reindeer herd's spirit (siida-haldi), and so on. The best known among the evil spirits or ghosts is the stallu, a tall, strong but silly and wicked being, "half man, half devil," who lurks in the woods and challenges the Lapp to wrestle with him for life or death. The victor may kill his opponent and thus get possession of all he owns. Although the Lapp is weaker he usually overcomes the stallu by cunning and then takes his knapsack full of gold and silver.

Sieidi is of a different origin from other gods and spirits. He has apparently belonged to the Lapps' religion in its oldest manifestations and maintained his position until the present day. According to national tradition and old written sources about eighty Sieidi places of worship are known in Lapland and north Finland, and it is probable that some of the old Reindeer Lapps still sacrifice to their Sieidi in out-of-way places. Sieidi is usually a rock remarkable in color and shape, often on a lake shore, near a cliff, an island, a hill, or a mountain. Of such small rocks it was said that a man could lift them. In later times this conception of Sieidi has undergone such a change that some of the gods already mentioned were considered as living in separate Sieidi. Thus some Sieidi mountains represented Äijih (Thunder and Old Man), and some other mountains or stones his wife (Akku, Old Woman). The origin of this belief in Sieidi is obscure. The most correct opinion seems to be that of the Norwegian researcher, Qvigstad: "Es lässt sich nicht leicht entscheiden welche Auffassung dir Lappen ursprunglich von den Sieidis und heiligen Bergen gehabt haben, ob sie nämlich den Stein oder Berg an sich oder den in ihnen wohnenden Geist verehrt haben." (It is not easy to decide what was the original conception of the Lapps as to the Sieidis and the holy mountains, whether they honored the stone or mountain itself or the spirit dwelling in it.) But at least in recent times the Lapps have honored and worshipped more the spirit dwelling in the Sieidi than the object itself. There were Sieidis to which larger circles of people sacrificed, others that were only worshipped by a great family, and others again that were reverenced by only a single family. The Sieidis differed also in the influence they exerted: some favored fishing, others promoted hunting, others reindeer-breeding, but all of them demanded regular sacrifices—fat fish, game, horns of reindeer, both tame and wild, small silver objects, and so on. But if the Sieidi rock, in spite of sacrifices, omitted to favor the occupation of a Lapp, he could repudiate, even punish, his Sieidi. It also is characteristic that some old Reindeer Lapps still think that the help of the Christians' God is not enough for their occupation: they need also the help of the Sieidi.

Formerly the Lapps all over the north were renowned for their skill in conjuring. This perhaps was chiefly due to the fact that they had divining or magic

drums, with the help of which the shaman or *noaidi* could do wonderful things. The magic drum links the early beliefs of the Lapps to the mythological conceptions of the old north Eurasiatic world and even more distant places: the magic drum is to be found also among the Eskimo and certain Indian tribes. It was oval in shape: its rather narrow sides were of thin birch wood, and its skin face was of tanned reindeer leather on which many kinds of figures were painted with alder bark. On the skin a brass ring was laid, and when the drum was beaten with a T-shaped stick or reindeer horn, the ring jumped about over the figures and finally came to rest on one of them. This was the basis upon which the shaman could foretell events. Only two or three of the Finnish Lapps' drums (from the seventeenth century) have been preserved to the present day: two from Kemi Lapland, one doubtfully from Utsjoki. In the former the skin is divided into three horizontal zones representing heaven, earth, and the underworld, with their gods and their sacrifices. In the earth-zone there are pictures of people, animals, Sieidi-places, a Lapp koatti, a church (?), and so on. The skin of the latter is divided into five zones, in which there are, besides the wind and thunder gods, the sun, the moon, etc., also God the Father, His Son, some saints, and down below the devils with hell-fire and a tar-cauldron. Thus here there is a strong Christian influence.

The Lapps believed, like many other primitive peoples, that if the bones of a reindeer and other animals were left whole after a meal and taken together to some sheltered place, a new living animal would arise from them. In the same way if fish-bones were thrown into the water, they would swim away as a new fish. Game was carried into the koatti through a special little door in the back wall which was not allowed to be used for anything else. On no account might the women go through that door, nor might they touch the hunting weapons of a man. The bear, "the king of the woods," enjoyed special reverence, though that did not prevent the Lapps from killing it when they met. When the bear was killed, many rites were observed in taking it home and eating it. Tabu words must be used, for the bear had mysterious powers: it could hear and understand human talk many miles away and see in sleep future happenings. Clever people could transform themselves into bears if they turned a somersault in a special way over a fallen tree or walked under a low bent tree trunk: the same belief is also found among the Samoyed of Siberia.

The Lapps fear the evil eye. For example it can so affect a gun that it misses the target. When a man comes from fishing, he hides his catch under the thwart. If in spite of this, any stranger happens to see the fish, he casts his knife among them. If one catches a rather rare animal, or some game in an unusual way, this

indicates some evil, even death, for the person concerned. A sleeping animal may not be killed: it must be aroused, for example by whistling softly, before one shoots it. The trapping apparatus on land and in water must not be examined and emptied on the same journey, and so on.

Illness is of the three kinds: (1) sent by God, incurable; (2) sent by an ill-natured person—this is cured by a shaman; and (3) an ordinary illness, which is not fatal. The spirit of man dwells near the heart. The signs of life are blood and breathing. The Skolts call the heart and genitals together spirit parts; they know nothing of the idea of a soul. On the other hand the Lutheran Lapps, in accordance with Christian belief, speak of the spirit and the soul. The Enontekiö Lapps believe that the spirit lives in the stomach and the soul in the head; in sleep one can get into contact with the spirit world. The Reindeer Lapps in Inari imagine that everyone has an invisible companion, who lives outside him or her and can appear as a double. It warns him of danger, and through it one can extract secrets from a sleeping or dying person. After death the double remains forever by the grave of its owner and can appear to others as a ghost. Every family among the Skolts has its invisible companion (*kaddze*) in animal shape. For one family it is a sheep, for another a bear, for a third the wild reindeer, for a fourth a hawk, for a fifth the burbot, and so on. This companion is inherited by the sons from the father and by the daughters from the mother and cannot be transferred to others. This conception resembles that of the totem inasfar as the person in question may not eat the animal to whose species his kaddze belongs. The shamans send their *noaidi-kaddzes* to fight with each other. A shaman can also have several such companions.

When a Reindeer Lapp died, the body was taken out of the koatti, not by the door, but through an opening made by lifting the lower edge of the tent cloth (as also among many Siberian tribes), and a stone was laid upon his former sleeping-place. Then he was buried in his clothes, wrapped in reindeer-skins, and lying in a kēres or in a hollow tree trunk, on the shore of a stream or lake, or on an island, or in the forest. According to information from 1620 the dead person's dog was tied to the grave and his drum buried with him.

In excavating some Lappish graves from the seventeenth century skeletons were found with brass rings, horn drum-sticks, arrow-heads, knives, needle-cases, tinder-boxes, finger-rings, copper and silver coins, and bored bear's teeth (amulets). Even in Christian times the Reindeer Lapps—if anyone died during their seasonal migrations far away from the church—have hung the corpse in an akja between two birches, and left it to dry in the wind and sun. On their way back in

early winter the family would fasten the kēres behind a reindeer at the end of the caravan and take it to the cemetery.

MARRIAGE AND NAMES

Courting and wedding customs are rather different in the several parts of Finnish Lappmark. In earlier times the contracting of a marriage was very much like making a bargain; and here three characteristics are common to all Finnish Lapps: (1) the suitor is accompanied by a spokesman and often his father, and has with him lots of alcoholic spirits and gifts (e. g. silver ornaments and coins), also for the girl's relatives; (2) the relatives have the right to express their opinions on the matter; (3) the couple may not be too closely related. It is also usual that the girl who is being courted cannot be present until a decision has been made and also an agreement as to the betrothal gifts and dowry, and that the bridegroom shall pay the expenses of the wedding. The giving of presents to the young couple by the wedding guests is apparently a later addition copied from neighboring peoples. The following custom of the Kemi Lapps, reported from the seventeenth century, seems very primitive. At the betrothal the fathers of the young couple struck fire from the flint in order that "as the fire is hidden in the steel and flint and becomes visible in sparks, so should the fire of love produce children when the couple were united." Among the Lutheran Lapps the suitor stays out in the yard while his spokesman goes into the girl's home. Formerly the courting lasted a long time, even as much as one to three years, because the father and the relatives of the girl wanted to be regaled with spirits as long as possible—hence the proverb: "You don't get a wife in Lappland without spirits." Among the Reindeer Lapps the suitor and his spokesman drive with their reindeer three times round the girl's koatti—if anyone comes out to meet them a fortunate result may be expected. The wedding customs of the Orthodox Skolts are very complicated and resemble in the main those of the East Karelians and the North Russians.

According to the tax-registers of the sixteenth century and early sagas, the Lapps had formerly such names as Juksa ("a bow"), Tuksa ("store, stock"), Aigē (< *aigi* time), Sarrē (< *sarrah* "create"), Peäivē (< *peäivi* "sun, day"), Miellē or Mielak (<*miella* "desire," "disposition"), Akkē (< *akki* "age"), Tshoarvē (< *tshoarvi* "horn"); further, compound names like Aigēsarrē, Akkēmielak, Sarrējuksa, Akkēpeäivē, but also such names as cannot now be interpreted: Kuivē, Missē, Tsajjadsh, Tsurnadsh, Morokka or Morottijjē. Besides these Finnish and East Karelian names, some are used which the Lapps have most probably taken over from old tax collectors and merchants. Curiously

enough they had also some Christian names as early as the sixteenth century, although the real missionary work among them began only in the seventeenth century. At that time the Lapps had no surnames: such names first appear between 1680-1720, clearly under the influence of the priests and other authorities. Then the Lapps began to get Christian names—only one each—and many of the old ones were changed into surnames, for example, the Inari Lappish names Aikio, Kuuva, Mujo, Morottaja, Sarre, and Valle. Some of them were named after places; others were given Finnish and Scandinavian names; the Skolts again, when they became Christians, were given Russian names, both first and family names.

LITERATURE

The most primitive of the Lapps' national poems are the so-called *juoigus* (jodels). They are short, with the stanzas set to rather monotonous melodies in which the Lapp expresses his moods, e. g. on the mountains, when driving, at the markets, or on festive occasions, especially under the influence of intoxicants. There are specialists who know several hundred different juoigus, each with its own melody, about different persons; but remarkable events, lakes, mountains, reindeer, and other animals are also among their motifs. The juoigus (*levde*) of the Skolts are usually longer than the others; they have also epic songs.

Proverbs and riddles belong to their national prose poems, mostly among the people of Inari and Utsjoki, and also sagas and legends that are rather numerous everywhere, though least among the Lapps of Enontekiö. The sagas about shamans (*noaidi*) and metamorphoses are typically Lappish: in the latter people are transformed into animals—bears, wild reindeer, lake-salmon, giant flounders, etc. Stallu sagas (see page 64) are also Lappish. Legends about *tshudde* are very general—the wandering enemies who plundered and murdered Lapps. Their origin is to some extent in the boundary quarrels between the Finns and the East Karelians (or Russians); but some of them originated in prehistoric times. They are general also among the Finns, the East Karelians, and the North Russians. Animal sagas are great favorites: in them appear not only the Lapps, but also the fox, the bear, the wolf, and the reindeer. They probably originated from among the motifs of Scandinavia, although they have been adapted to a completely Lappish milieu so that they must have been taken over in very early times. Finally the Lapps have a large selection of sagas concerning adventures, kings, giants, devils, and so on—motifs which are found among most nations.

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1 Some scientists suppose that the "proto-Lapps" were Samoyed who came under a strong influence of the Finno-Ugrian languages when they were moving to the west and southwest.

SOME NOTES ON THE ORIGIN OF TARO

ROBERT F. G. SPIER

ANY INVESTIGATION of the origin of a cultivated plant cannot be, in itself, complete and self-sufficient, for with the plant in question there go a series of associated items. One investigates, then, something which approximates the position of one trait in a complex. The foregoing is not to be interpreted as intending that the associated traits are as comprehensive as those found in a culture-horizon of the Kulturkreislehre, but rather that such associations do exist and may be demonstrated statistically if one is so inclined.

Taro is a part of two such associations, the agricultural economies of parts of Oceania and of parts of southern Asia. However, it will be handled here as a separate and independent item and the tentative investigation will, as a consequence, appear somewhat truncated. For this circumstance, our apologies: the full and complete inquiry is much too ambitious for a paper of this nature.

The inquiry will be carried forward in five lines—botanical, archaeological, ethnographic, linguistic, and historical—to the extent to which this is made possible by the data. Some reference will be made to earlier investigations into the history of other domesticated plants in an effort to profit by their successes and avoid their shortcomings. It is hoped that the results of this investigation, tentative though they may be, will be of some value in illuminating the history of an area where we are beset with a plethora of conflicting schemes of the diffusions of peoples and cultures.

Examination of the botanical literature reveals that little attention has been paid to the ultimate origins of many widespread plants. Taro (*Colocasia*) is, unfortunately, one of those so neglected. Even the great historical botanist, de Candolle, is vague about its origins, placing them in India, Polynesia, and the Malay Archipelago.[1] It seems probable, from other evidence, that we can rule out the last two of these, or at least Polynesia. Dispersion of the plant into Polynesia apparently followed human occupation of the region. This question hinges on the distribution of wild varieties of *Colocasia*. Burkill, in mentioning the presence of the wild plant in Polynesia, says that this is due to its robustness, not to its being a true native.[2] Apparently here the "wild" form is not truly

1 Alphonse de Candolle, *Origin of Cultivated Plants* (London, 1884).

2 I. H. Burkill, *A Dictionary of the Economic Products of the Malay Peninsula* (London, 1935), vol. 1, pp. 638-642.

wild, but escaped from cultivation. However, in continental Asia the case may well be somewhat different. Watt,[3] Balfour,[4] and Burkill[5] all make references to wild varieties in tropical India: these are references to varieties of *C. antiquorum* and *C. esculentum*. In addition Watt states that *C. antiquorum* is found wild in Ceylon, Sumatra, and several islands of the Malay Archipelago, and quotes de Candolle to the effect that *C. macrorrhiza* is found wild in Ceylon and Tahiti.[6] I should be inclined to agree with Burkill's analysis of the situation and his statement that *Colocasia* is a native of India and elsewhere in Southeast Asia.

There are apparently few limitations on the places where taro may be grown. The wild (or escaped) varieties are all tropical in their distribution and grow well there. However, Watt reports that the wild plants, while plentiful, rarely produce the tubers for which the plant is usually cultivated. Such contrast of cultivated and wild varieties is no novelty, for the development of usefulness of both plants and animals in the domesticated state is not uncommon. On analogy from the tropical areas of the Americas it might be expected that within this belt the local variations of climate, due to differences in elevation, would severely limit the range of the plant. This is not the case. The vertical range of *Colocasia* runs from sea level to over 7000 feet: Watt reports an 8000-foot level,[7] and Balfour makes reference to its cultivation at 6500 feet in the Punjab Himalayas and to 7600 feet at Chamba (in the Punjab). Rainfall in the areas in which it is grown is quite variable, ranging from forty inches annually in parts of upper Burma to over 200 inches in its Indian habitat. Barrett states that dasheens (a West Indian variety of the plant) yield well in dry land.[8] There are, in addition, varieties grown in swampy places. (Of varieties, more later.) The amount of moisture necessary for growth does not seem to be critical. The growing season ranges from four to eight and twelve months depending on the climate. After reaching maturity taro need not be harvested (dug up) in the drier climates for the rhizomes keep well unless the soil is very wet. This resting period will not occur in situations of excessive moisture; the plant will start growing all over again. Watt states that a sandy loam with lots of nutriment is the best type of soil and that a heavy clay or pure sand is not suitable.[9] There was no information

3 George Watt, *A Dictionary of the Economic Products of India* (Calcutta, 1889), vol. 2, pp. 509-513.

4 Edward Balfour, *The Cyclopedia of India and of Eastern and Southern Asia, Commercial, Industrial, and Scientific, etc.* (3rd ed., London, 1885), vol. 1, pp. 783-784.

5 Burkill, *op. cit.*

6 Watt, *op. cit.*

7 George Watt, *The Commercial Products of India* (London, 1908), pp. 398-400.

8 O. W. Barrett, *The Tropical Crops* (New York, 1928), pp. 375-377.

9 Watt, *The Commercial Product: of India.*

available on the optimum temperature for the growth of *Colocasia*. However, the regions in which it is grown have normal mean temperatures in winter in excess of 50° F, although this may not apply to the higher mountain areas. Burkill says that the range of growth of taro is wider than that of yams. The northern and southern limits of cultivation are 10° of latitude beyond those of the greater yam.

Burkill believes that its dispersal to the east of India was probably considerably earlier than to the west. It was introduced and cultivated in Egypt before the beginning of our era. In this opinion we should concur if only on the grounds that the plant is apparently a native of areas to the east of India. The present distribution of cultivated taro includes southern Asia, the Malay Archipelago, Micronesia, Polynesia, the West Indies, the southeastern United States, and possibly Madagascar. Of the introduction of taro into the West Indies and the United States we have definite historical evidence and its presence there is in no sense aboriginal.

Assuming that the foregoing is correct, it is probable that taro has been cultivated in Southeast Asia during the past 2000 or 2500 years. There is some contributory evidence for this dating in de Candolle's statement that there is no Chinese written mention of the plant before 100 BC.[10]

Varietal proliferation is another line of evidence arguing for relatively great antiquity. It has been the principle on which Vavilov and his followers have operated that the area showing the greatest varietal specialization of a particular cultivated plant is its homeland. As a corollary to this principle it has been thought that the longer the history of the plant the greater will be the number of varieties. No information could be found as to the rate of mutation of *Colocasia* into new species and varieties, but there are a number of statements which indicate that this may be high. There are found listed seven species of *Colocasia* (*antiquorum, esculentum, gigantea, indica, macrorrhiza, nymphaefolia,* and *odora*) and one of *Alocasia* (*decipiens*).[11] The intrusion of the generic name *Alocasia* is apparently due to a change in the botanical nomenclature. Crawfurd refers to taro as *Caladium esculentum*.[12] The several generic names are, unquestionably, references to the same genus. Of varieties there are, literally, hundreds. Working among the Siuai Papuans on Bougainville, Oliver found

10 De Candolle, *Origin of Cultivated Plants*.

11 A. T. Gage, *The Vegetation of the District of Minbu in Upper Burma* (Records, Botanical Survey of India, vol. 3, no. 1, Calcutta, 1904), p. 111.

12 John Crawfurd, *On the Migration of Cultivated Plants in Reference to Ethnology; Articles of Food* (Transactions, Ethnological Society of London, n.s., vol. 5, pp. 178-192, London, 1867).

that one of his female informants could distinguish and name at least fifty varieties of taro grown there.[13] Barrett states that the varieties of taro in Polynesia, Malaysia, and south China number over three hundred. Due to the widespread distribution of taro and its deliberate introduction into new areas, such as the West Indies, far from its probable origin, little or nothing can be done toward demonstrating the point of origin by examination of the number of varieties in the various areas. However, the great number of varieties would seem to indicate either considerable antiquity in the hands of man or a very high rate of proliferation into new varieties.

If Burkill is correct in placing the origin of taro east of India, it could not be very far east, for that would take us out into the Oceanic world. The tentative dating given the Oceanic migrations almost precludes any possibility of its having been carried from Oceania to the mainland of Asia in any counter-current in time to get to Egypt before the year One. Concluding the survey of the botanical evidence it may be reasonable to believe that *Colocasia* was domesticated, perhaps several times, in an area centering on Bengal or Assam or upper Burma.

Turning to archaeological evidence, we find that the information is in even worse shape than might be expected. The greatest mass of data in published form deals with periods much too late for our purposes. Especially is this true for Burma, where primary attention has been given to the remains of early Hindu civilizations. The investigations of megalithic cultures add nothing to our knowledge of taro, and the work which is being done in ever-increasing volume on the Pleistocene and immediately post-Pleistocene remains is too early for our investigation.

There is this major difficulty inherent in the subject of our discourse, regardless of the thoroughness of archaeological investigations, that the plant remains are extremely perishable. Unlike the evidences of cereals which have been excavated in other parts of the world, taro will not leave definite impressions in storage places. Nor will there be any chance of identifiable impressions left in pottery. The plant, its stems, leaves, and the cherished rhizomes are all too perishable to survive for several millenia in the ground in such a moist climate as prevails in the tropics. While one cannot definitely rule out archaeological evidence as being of value in this quest, the likelihood of its doing so seems extremely remote. Ward is of the opinion that present archaeological evidence from Southeast Asia is a total blank in regard to the history of agriculture in that region.[14]

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13 Douglas Oliver, verbal report, October 1948. He stopped recording at this point when it became evident that she could continue *ad nauseum*.

14 Lauristan Ward, personal communication, January 1949.

Ethnographic evidence is somewhat better for our purposes. Yet in some instances it is exceedingly annoying to find references to "other plants grown" without specific names attached. Considering the areas involved in many of these cases it is entirely probably that these "other plants" include taro.

One factor seriously complicating the tracing of taro through ethnographic works is that in many parts of Southeast Asia rice is now the predominant crop where there is good reason to believe that it formerly was not.

Apparently rice, having greater prestige, has supplanted taro as a staple. Mills is of the opinion that taro was the original staple crop of the Nagas.[15] He bases this idea on the fact that it is still the food offered ceremonially to the dead. Taro is also used among the Nagas, as an offering to the evil spirit involved, in the recovery of a stolen soul. Mills also states that taro forms an important part of the diet of the Rengma poor people; and the poor usually eat the less prestigeful foods in any culture.

References to the growing of taro by the more primitive peoples of the Malay Peninsula seem to be confined to botanical works. Burkill says that taro is the sole agricultural product of a tribe in Pahang (Federated Malay States). He also gives the Sakai and Jakun words for taro. Nothing is said directly in the works of Cole,[16] Schebesta,[17] or Skeat and Blagden[18] about these people growing taro. There is one statement in Skeat and Blagden which might be interpreted to indicate that the Semang either gather or grow taro:[19] "Of roots and fruits it is not only the innocuous kinds that are employed; even poisonous yams and roots are specially treated by the Semang to render them fit for food." Ridley writes in a footnote to the foregoing that it is only *Dioscorea daemona* which requires this treatment, but the "other roots" might well include taro. The irritant properties of taro are well known and must be counteracted before the rhizome is edible. Watt attributes this irritation to the purely mechanical action of the needles of calcium oxalate present in the plant.[20] However, the astringent properties are utilized in some areas to promote the healing of wounds and Burkill notes that *Colocasia gigantea* produces hydrocyanic acid. It would appear that treatment is definitely called for and that the irritation is more than mechanical in its origin.

Surveying those areas in Southeast Asia in which taro is grown for any

15 J. P. Mills, *The Rengma Nagas* (London, 1937), p. 77.

16 Fay-Cooper Cole, *The Peoples of Malaysia* (New York, 1945).

17 Paul Schebesta, *Among the Forest Dwarfs of Malaya* (London, n. d.).

18 Walter W. Skeat and Charles O. Blagden, *Pagan Races of the Malay Peninsula* (London, 1906).

19 Skeat and Blagden, *op. cit.*, p. 114.

20 Watt, *A Dictionary of the Economic Products of India.*

purpose whatsoever (it is pig fodder among some peoples), we find the following: Assam, between the Brahmaputra River and the Burma border (Ao, Lhota, Rengma, Sema, Angami, and Konyak Nagas); northern Burma; south China; the Malay Peninsula (by natives in Pahang, elsewhere primarily by the Chinese); Siam; Laos; Indo-China; and generally throughout India.[21] It is interesting to note that it is not reported as of major importance in those areas which are most advanced culturally. This appears logical in view of the substitution of rice, believed to have occurred with advancing civilization. The more backward people have apparently clung to their earlier staple. The Konyak Naga, reported by Hutton to rely almost entirely on taro as a staple, are portrayed by Fürer-Haimendorf as still in their aboriginal state and quite unacculturated to modern conditions.[22] Here, it seems, is a good example of a people who still stick to first principles though they plant a very limited amount of rice. Hutton feels that they are missing a golden opportunity to improve their lot since their land is ideally suited to rice cultivation.

The utilization of philological evidence in investigations of this nature has become rather passé, and is admittedly fraught with hazards for all but the competent philologist, but in view of the general paucity of material it is deemed worthwhile for what little light it might shed. Harshberger, in his now out-dated but excellent study of the history of maize, makes good use of data of this nature.[23] Several of the botanical works consulted (Watt, Burkill, Mason, and Balfour) give lists of native names applied to varieties of *Colocasia*. Mills gives the names of taro and its varieties among the Nagas (Lhota, Ao,[24] and Rengma).

There is one difficulty with using this information, namely, that the methods of phonetic transcription vary from author to author. However, the bulk of the data is derived from Watt and is probably, therefore, reasonably homogeneous in this regard. Watt does not indicate the sources from which he has gotten these native names.

It is in no way surprising to find the same form within one language family, but when it cuts across families there is a distinct probability of some borrowing process having taken place. The primary question in these cases is which way has it gone?

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21 F. Gagnepain, "Aracees" (in Henri Lecomte, *Flore générale de l'Indo-China* (vol. 6, fasc. 9, pp. 1138-1141, n. d.)

22 J. H. Hutton, "Introduction" (in J. H. Mills, *The Lhota Nagas*, London, 1922), p. xxix; Christoph von Fürer-Haimendorf, *The Naked Nagas* (London, 1939).

23 John W. Harshberger, *Maize: a Botanical and Economic Study* (Contributions, University of Pennsylvania Botanical Laboratory, vol. 1, no. 2, pp. 1-134, Philadelphia, 1893).

24 J. P. Mills, *The Ao Nagas* (London, 1926).

Kachu and its variants is found in the Indic tongues listed (except Singhalese) and in Angami Naga, a Tibeto-Burman language. *Kaladi* and its variants is found in widely divergent languages from Malayalam to Malay and Jakun (probably a member of the Austric group). *Tales* and variants is found in the Malayo-Polynesian family and, perhaps, in the form *terem,* in the Bombay dialect which belongs to the Indic family. The forms of *ghoya* (from Hindustani) range to Angami Naga and perhaps to Javanese. There are other probable correspondences which become evident upon examining the full range of data; further enumeration here would be pointless.

The outstanding thing in this survey is the number of similarities which include the Angami Naga cross-cutting lines of linguistic grouping. These likenesses, working from the Angami outward, reach into language areas to the southeast and to the west. It seems rather unlikely that the Angami in borrowing the names along with the crop—if they did—should have done so from directions almost diametrically opposed. An alternative suggestion is that the Angami were on the route of diffusion of taro and so got the words in passing. On the basis of intuition rather than fact, this does not appear likely since the same forms are not common to languages on both sides of the Nagas. Lastly it is possible that the Angami were close to the center of origin of taro and that these words was diffused from that region. Unfortunately our data do not associate the particular words involved with the varieties of taro to which they belong: if this were so, we should be certain on several of our points. However, one might explain the differential diffusion of the several words as being associated with differential diffusion of varieties of taro. The areas are not the same climatically to the west and southeast of Angami territory, and the same variety would not necessarily be suited to both types of climate. Obviously this is a hypothesis and must not be taken for fact, but until more facts are forthcoming there is little more which can be done with these data.

At this point we run into one serious difficulty. If the Angami Naga are presumed for the moment to be responsible for the domestication and diffusion of *Colocasia,* a lower threshold is placed on the date at which this could have taken place. The Nagas are Tibeto-Burman speakers (their language classified by Bloomfield with Bodo and Kachin[25]) and this group is believed to have moved southward into the area along the courses of the Brahmaputra and Salween Rivers. Perhaps this movement was a part of the general basic peopling of the peninsula of Southeast Asia, but this does not seem likely. The evidences of early man in Java and south China and of early lithic industries in the Irrawaddy valley would

25 Leonard Bloomfield, *Language* (New York, 1933).

seem to show that the area was not populated by any late invasion. We are left again with several possible explanations. The Nagas, on coming into the region, may have been introduced to taro by the natives already resident there. The words used may then be loan words into the vocabulary. Alternatively, the Nagas may have had the plant before moving south though botanical evidence makes a northern origin unlikely. Lastly, the Nagas may have domesticated the plant themselves after occupying the area. In this latter event, the probable dating of domestication in the first millenium BC or earlier should come after the arrival of the Tibeto-Burmans in Southeast Asia. In summing up the philological evidence it would seem reasonable to say that the Angami (or other) Naga were at a center of domestication of taro perhaps prior to the diffusion of the plant and that they may have contributed the names by which it became known in other areas. This need not imply that they themselves were responsible for the domestication of the plant, but this too is within reason.

It would be desirable if, at this point, there were historical data which might be used in the solution of the problem of origin. Unfortunately, such evidence is almost completely lacking. Such data as are available—the earliest Chinese reference, etc.—were presented in the course of botanical analysis. Whether this hiatus is the product of a total lack of historical information, as seems probable, or whether it has not yet been ferreted out, one cannot at the moment say. However, in view of the rather early date of domestication and spread, it is unlikely that the area of supposed origin will ever produce written records on taro: the written records of that region are not old enough.

To recapitulate our conclusions, we find the following: that taro is a native of southern and/or southeast Asia; that taro is not, within the tropics, particularly limited in its habitat; that the varietal proliferation of taro and its adaptation to many climates is evidence of a relatively long period of domestication; that the probable age of cultivation of taro in Southeast Asia is at least 2500 years; that the evidence of its habitat when wild or escaped is such that domestication may well have taken place in Bengal or Assam; and that linguistic data, poor though they may be, would tend to bear out Assam as the locus of domestication.

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ON THE SUPPOSED EVIDENCE OF EARLY MAN IN THE MIDDLE PLEISTOCENE OF SOUTHWEST CHINA

DIRK ALBERT HOOIJER

AS RECENTLY STATED by Dr H. L. Movius, Jr, the pits of Yenchingkou—the first fossiliferous fissures of southwest China to be made known, and originally described by Matthew and Granger[1]—certainly are among the most critical localities in the Old World with regard to research on the morphology of Early Man. Some evidence as to the contemporary existence of Man with the Middle Pleistocene vertebrate fauna of southern China has been obtained, but not so, according to Movius,[2] at Yenchingkou.

However, there is a little note in Dr Granger's account of his collecting at the Yenchingkou sites, Wanhsien, province of Szechwan, southwest China, entitled "Evidence of contemporary human occupation."[3] In this chapter Dr Granger mentions what he calls two rather unsatisfactory bits of evidence, namely a small perforated stone disk, and also a deer antler "some of the prongs of which had been cut off with the aid of a crude implement. The antler was a true fossil, in exactly the same state of preservation as all others from the pits, and the cutting was ancient—probably done while the antler was fresh—but there is a question as to just where the antler was found. The incisions were not noticed in the field, and it was not until the specimen was cleaned in the laboratory that anything unusual was observed about it, and unfortunately this was one of the few specimens that arrived without full data. A small collection of bones, including an antler or two, was purchased in Wanhsien of our wholesale drug merchant the day before our departure on our return journey to Peking. They were said to have come not from the Yen-ching-kou region but from caves or pits in northwestern Hupeh." The province of Hupeh is just northeast of Szechwan, but also in southern China. Dr Granger continues as follows: "It is quite possible that this particular specimen was one of this lot which in the

1 W. D. Matthew and W. Granger, *New Fossil Mammals from the Pliocene of Sze-Chuan, China* (Bulletin, American Museum of Natural History, vol. 48, pp. 563-598, 1923).

2 H. L. Movius, Jr., *The Lower Palaeolithic Cultures of Southern and Eastern Asia* (Transactions, American Philosophical Society, n. s., vol. 38, no. 4, pp. 329-420, 1949), pp. 406-407.

3 W. Granger, "Palaeontological Exploration in Eastern Szechwan" (in R. C. Andrews, *The New Conquest of Central Asia*, Natural History of Central Asia, vol. 1, pp. 501-528, 1932), pp. 517-518.

hurry of departure did not receive proper labeling. Here again, while there is unmistakable evidence of the early occupation of this region by man, we cannot assume that he was living there as a contemporary of the Yen-ching-kou fauna."[4]

As far as the perforated stone disk is concerned, Dr Granger assumes that it came from one of the pits, but that it was probably deposited later than the *Stegodons,* hyaenas, and other associated animals. Dr Movius writes me that the presence of this stone disk in association with the Yenchingkou fossils makes him somewhat suspicious, since these objects are normally found in southern China in a Mesolithic, or even a Neolithic, context.

Thus we can say that there is no absolute evidence of the presence of Man in the Yenchingkou fauna, but the worked antler is worthy of a thorough study anyway, because the evidence we have of the existence of Pleistocene Man in southern China is very scanty indeed.[5] Nevertheless, the interesting finds made by Dr Granger and reported upon in his 1932 paper have apparently been overlooked by authors on this subject since 1932.

While working at the American Museum of Natural History collection of fossil mammals from Yenchingkou, I found a pair of antlers on a piece of frontal, which shows a great many cuts. The specimen is No. 18813 of the Museum collection of fossil vertebrates. According to the catalogue and the field book, and the field number this specimen also bears (116), it came from a miscellaneous lot, including, e. g., *Sus* as well as many rodent skulls. The pit at Yenchingkou in which this antler pair was found began to yield fossils at a depth of fifty feet; at seventy feet depth rodents were still found sparingly, and the artiodactyls became more abundant. So far the field book of Dr Granger. Since in his 1932 paper Dr Granger does not mention the catalogue number of the specimen of deer antler on which he found evidence of human workmanship, it is difficult to find out to which specimen Dr Granger was referring. In fact the Yenchingkou collection as now preserved in the American Museum contains no specimen of deer antler with the tines cut off intentionally other than No. 18813 to which I have just referred. This specimen is definitely from Yenchingkou and was found in the winter season 1922-1923, while the antler mentioned by Dr Granger was collected during the winter of 1921-1922. Apparently the latter specimen has been mislaid, or was never catalogued, which is not very important anyway since it would have no reliable data.

At first sight, to the inexperienced eye, it looks as if the antler pair No. 18813

4 *Idem,* p. 518.

5 See reviews by F. Weidenreich, *Giant Early Man from Java and South China* (Anthropological Papers, American Museum of Natural History, vol. 40, pp. 1-134, 1945), pp. 92-94, and Movius, *loc. cit.*

had been worked in an attempt to point the right brow tine, while some efforts seem to have been made to break the beam in several places where deep and rather narrow transverse cuts occur. The greater part of the left beam above the brow tine is missing, and the remaining stump shows that the beam has been cut or hacked into all around so as to get through the compacta, after which the spongiosa would have offered less resistance to breaking.

As is the case with the specimen to which Dr Granger referred, the damage done to the present specimen most probably dates from the time when the antlers were still fresh. From the rounded cross-section of the antlers, and from its brow tine forming an acute angle with the beam, we can safely identify the above discussed fossil specimen as *Rusa unicolor* (Kerr) subspecies. This is a deer abundantly represented in the Yenchingkou collection but not previously dealt with by Matthew and Granger[6] because, correctly, they did not consider this form to be a new species.

No remains of Man or of large anthropoid apes have been made known thus far from the Yenchingkou locality. However, worked antlers do occur at numerous Pleistocene, pre- and protohistoric sites, all over the world, where early or primitive Man and deer found themselves together. Deer antlers have always been highly valued by Man, the tool-maker.

Due consideration must be given to the fact that damage on antlers (as well as on bones and teeth) that might easily be mistaken for the work of Man, can be made by various animals. Pei[7] has made a lucid contribution to this subject. Among the rodents, porcupines especially are known to be in the habit of gnawing at hard objects such as bones and teeth, thereby making scratches and cuts that look very much like the work of human beings. As a matter of fact the *Stegodon-Ailuropoda* faunal complex from south China, Burma, Indo-China, and the Malaysian area, to which the fauna of the Yenchingkou pits definitely belongs, is even noted for the teeth and bones having often been gnawed by porcupines before fossilization. The *Gigantopithecus*[8] molars, which are prob-

6 Matthew and Granger, *New Fossil Mammals from the Pliocene of Sze-Chuan, China.*

7 W. C. Pei, *Le rôle des animaux et des causes naturelles dans la cassure des os* (Palaeontologia Sinica, series D, vol. 7, 60 pp.).

8 I may briefly mention in this place that it is becoming increasingly evident that *Gigantopithecus* is not a hominid as Weidenreich (*op. cit.*) has claimed, but an anthropoid ape: see the references given in D. A. Hooijer, *Some Notes on the Gigantopithecus Question* (American Journal of Physical Anthropology, n. s., vol. 7, pp. 513-518, 1949), and furthermore A. Remane, *Bermerkungen über Gigantopithecus blacki* (Zeitschrift für Morphologie und Anthropologie, vol. 42, pp. 134-137, 1950) and E. H. Ashton and S. Zuckerman, *Some Quantitative Dental Characters of Fossil Anthropoids* (Philosophical Transactions, Royal Society of London, series B, vol. 234, pp. 485-520, 1950) pp. 514-515.

ably from south China caves or fissures, have much of their roots gnawed, apparently by porcupines.[9] The same is true of practically every single tooth and bone in the prehistoric cave collection from central Sumatra where the porcupine genus *Acanthion* is abundantly represented.[10]

The peculiar fact remains, however, that porcupines must have been very keen about this specimen of deer antlers, for no other specimen from the same pit, nor from any other Yenchingkou pit, shows any sign of damage of this kind. Also, porcupines must have been exceedingly rare about Yenchingkou at the time when the now fossiliferous pits were being filled. The only porcupine specimen in Dr Granger's collection from Yenchingkou is a right ramus of the mandible of a large-sized porcupine, probably *Hystrix subcristata* Swinhoe subspecies (identification by Dr E. H. Colbert, ms.). Dr Colbert informs me that the possibility cannot be excluded that the scarcity of *Hystrix* at the Yenchingkou sites is only a matter of these animals having been able to climb out of the pits after having fallen into them. These comparatively small animals would not blunder into the open pits as would large animals, anyway.

In opposition to this view stands the fact that another rodent of similar or somewhat smaller size, viz., the large bamboo rat *Rhizomys troglodytes* Matthew et Granger,[11] is fairly abundantly represented at Yenchingkou, even in the very same pit from which came the antlers discussed above. This animal must have left the other antlers and bones untouched.

Are the pair of antlers recorded in the present paper proof of the existence of Man in the Middle[12] Pleistocene of southwest China?

I am extremely grateful to Mr Junius B. Bird, of the American Museum of Natural History, for having spent some time going over this specimen with me. Mr. Bird, from his rich experience as an archaeologist, assures me that he has never seen cuts and scratches on antlers or bones made in a similar way by Man. The only portion of the damaged surface that strongly suggests human working is that on the stump of the left beam. Here (as shown in Plate 1) the working must have been all around the beam in the attempt to get through the

9 Weidenreich, *Giant Early Man from Java and South China.*

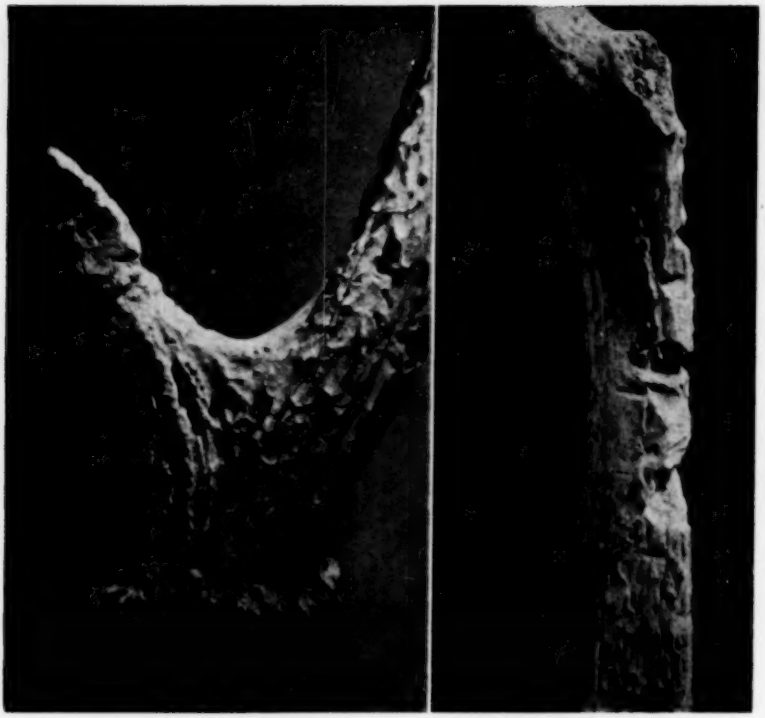
10 D. A. Hooijer, *Some Remarks on Recent, Prehistoric and Fossil Porcupines from the Malay Archipelago* (Zoologische Mededeelingen Museum Leiden, vol. 26, pp. 251-267, 1946).

11 Matthew and Granger, *New Fossil Mammals from the Pliocene of Sze-Chuan, China,* p. 574.

12 The Yenchingkou fauna is definitely post-Villafranchian, and apparently runs upward into the Recent, for some of the animal remains found in the pits are fairly recent-looking. However, the crucial antlers are as well fossilized as is, e. g., the *Stegodon* or *Nestoritherium* material.

PLEISTOCENE ANTLER FROM SZECHWAN

Rusa unicolor (Kerr) subspecies; base of left antler showing marks of rodent gnawing (Amer. Mus. Nat. Hist. No. 18813, Yenchingkou, Wanhsien, Szechwan, China: Pleistocene). Inner view: natural size.



A B

PLEISTOCENE ANTLER FROM SZECHWAN

Rusa unicolor (Kerr) subspecies (Amer. Mus. Nat. Hist. No. 18813, Yenchingkou Wanhsien, Szechwan, China: Pleistocene). × 2/3 natural size. A. Base of right antler showing marks of rodent gnawing on the brow tine: inner view. B. Right antler beam showing transverse cuts made by rodents (?): postero-internal view.

hard compacta. This is also the only part of the specimen on which we see convex scratches and cuts.

It is significant, Mr Bird observes, that the cuts shown on the left beam stump postero-internally (Plate 1) are all in pairs with a little ridge left between, just as the cuts of a pair of rodent incisors would look. The width of the incisors is about that of the bamboo rat, too. Furthermore, the cuts on the right brow tine (Plate 2, A)—all in transverse direction—would be meaningless and of no use if the desire was to point the tine before hacking it off. The deep transverse cuts, of which there are three on the posterior inner surface of the right beam (Plate 2, B), Mr Bird holds might have been made by a rodent that had lost one of its incisors. The fact that these cuts are distinctly concave in transverse direction is certainly not in favor of this being Man's work. Man would have made transverse cuts that would be either straight, or convex, in this way.

It is certainly unusual to have to think of a rodent with such a deficient gnawing apparatus that would have been so fond of just this single antler specimen that it gnawed three times rather deep into its right beam. However, it is perhaps safer to look upon this specimen of fossil deer as having been worked by porcupine or bamboo rat rather than by Early Man. However this be, I considered it worth while to bring this specimen to the attention of archaeologists, especially those working on the interesting subject of Early Man in southeast Asia.

SUMMARY

A pair of antlers of *Rusa unicolor* (Kerr) subspecies from a Pleistocene pit at Yenchingkou, Wanhsien, Szechwan, southwest China, shows signs of having been worked before fossilization. This specimen, which never has been recorded before, is the solitary piece with such indications in the large collection. The possibility of this damage having been made by animals such as porcupine or bamboo rat has been discussed, but the possibility cannot be completely excluded that it is, in part perhaps, of human manufacture too.

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NOTES ON THE DAKOTA GRASS DANCE

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THE GRASS DANCE, or Omaha dance, as it is sometimes called, is the most commonly performed dance among the Dakota or Sioux Indians at the present time. Although the dance now contains many Dakota elements, it originated in some other tribal group. Fletcher and La Flesche[1] state that it was adopted from the Omaha tribe, together with its characteristic steps, songs, and regalia. Wissler[2] also mentions the belief that the Dakota received the dance from the Omaha tribe, who had in turn received it from the Pawnee. Another possible source is suggested by Lowie[3] who describes the dance among the Sisseton, and says it was called "Winnebago dance" by them.

Peter Le Claire, a Northern Ponca informant interviewed by the author at Herrick, South Dakota, stated that the dance was given to the Dakota by the Ponca "about three hundred years ago" at a place "just east of the Black Hills of South Dakota." The Dakota, according to Mr Le Claire, gave horses to the Ponca in exchange for the dance. Le Claire explained that the Dakota term *Omaha* used in referring to the dance is actually the word commonly used by the Dakota for the Ponca tribe, the Omaha tribe proper being called *Omaha hca* or "real Omaha" by them.

The author finds it difficult to accept either the presence of the Dakota in this area or the possession of horses by them in the time circa 1650, but the adoption of the Grass dance by the Dakota from the Ponca is a much more likely possibility. Many older Dakota still make no distinction between the Omaha and Ponca tribes, calling both groups *Omaha*.

A Teton winter count examined by the author gives the year 1860 as the time of the adoption of the dance by the Dakota, but this may refer only to the Teton division of the tribe, as in 1867 Father De Smet[4] writes of the dance

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1 Alice C. Fletcher and Francis La Flesche, *The Omaha Tribe* (27th Annual Report, Bureau of American Ethnology, pp. 17-672, 1911), pp. 460-461.

2 Clark Wissler, *Societies and Ceremonial Associations in the Oglala Division of the Teton-Dakota* (Anthropological Papers, American Museum of Natural History, vol. 11, pp. 1-99), p. 48.

3 Robert H. Lowie, *Dance Associations of the Eastern Dakota* (Anthropological Papers, American Museum of Natural History, vol. 11, pp. 101-142), p. 130.

4 Hiram M. Chittenden and Alfred T. Richardson, eds., *Life, Letters, and Travels of Father Pierre-Jean De Smet, S. J., 1801-1873* (4 vols., New York, 1905), vol. 3, p. 1059.

being "the principal one among the Yanktons," which would have allowed only seven years for it to achieve this prominence.

Among the Omaha, Ponca, and Pawnee the dance was a warrior's society, and the Dakota adopted it in this form. For several years after its adoption, apparently, the Dakota retained the Grass dance as a warrior's society. Each member was formally initiated into the lodge, at which time his hair was ceremonially cut in the fashion of the society and he was presented with its characteristic insignia, the deer-tail and porcupine-hair roach headdress. The term "Grass dance" is said to refer to a former custom of wearing grass in the belt by members of the society. Leaders of the society wore a peculiar feathered ornament called the "crow belt" which symbolized a battlefield. The various insignia of the society were said to be a protection against arrows and bullets.

The society was made up of nearly all of the warriors of the tribe, and older informants state that its meetings were very popular. A feast of dog meat was nearly always associated with the meetings of the Grass dance society, and many older people still think of a feast whenever a Grass dance is mentioned.

With the passage of time the Grass dance seems to have shed many of its ceremonial aspects, although certain customs have persisted to the present day. The dance eventually evolved from a warrior's society into a social dance. Women were allowed to participate, and men and boys who had not won war honors were allowed to dance in Grass dance costume. The reasons for this change probably involved the general breakdown of the older Dakota culture and war patterns.

At the present time the Grass dance is seldom referred to as such by the Dakota. It is merely called "War dance" or "Indian dance" or the Dakota term *wacipi*, meaning "dance." Ordinary ballroom dancing is distinguished from this "Indian dancing" by the term "White dance" even though such a "White dance" may be an all-Indian affair.

As the Grass dance is one of the few aboriginal dances left among the Dakota, it has absorbed many features of other dances and dancing societies which are now extinct or nearly so; for example, a Buffalo dance costume may be worn by a dancer at the Grass dance, and songs of the defunct Strongheart and Crow Owner societies are sometimes used to accompany it.

Many other social dances are associated with the Grass dance, and are usually performed on the same occasion. Among these the most common are the "half breed" dances, including the Rabbit dance, the *Kahomini* or Indian square dance, the Forty-nine dance, and the Jellyroll. These are couple dances, copied after White dances but accompanied by Indian songs and drumming.

Dances more rarely performed, but seen occasionally, are the older Big Belly dance, the Fox society dance, the Coup Striking dance, and the Buffalo dance. Sometimes an old man will wear the costume of one of the old warrior's societies at the Grass dance. A person wearing such a costume leads the dancing if a song of the society he represents is sung.

Characteristic steps of other dances have been incorporated into the choreography of the Grass dance. One instance worthy of mention was observed among the Upper Yanktonai at Fort Yates, North Dakota. A dancer called the author's attention to a particular step involving three taps of the toe followed by a dropping of the heel, the right and left foot alternating. This represented, according to this informant, the tamping in place of the soil after corn had been planted.

The informant stated that formerly older dancers would sometimes carry in the dance a particular type of mirror which represented a hoe, and would lean over in the dance, pressing holes in the ground with the ends of the mirror frame. This action represented the planting of the corn. This step and the accompanying action, now a part of the Grass dance, was once a part of a separate Corn dance, according to the informant. This lends more support to the recent theory that the Dakota were not quite the non-agricultural nomads that they are often pictured as being.

The Grass dance has the same general form among all of the Dakota groups, although certain details may vary from place to place, such as the position of the drum in the dance circle, or the use of the crow belt. In the dance each individual dancer proceeds independently, moving in a general clockwise direction around the room or bower. Dances may be held either out of doors in a dance bower or inside a frame house reserved for that purpose. Until shortly after the turn of the century earth lodges resembling those of the Omaha or Arikara were used as dance houses.

The musical accompaniment to the Grass dance consists of singing to the cadence of a large drum. The songs last about one minute each. One singer will take up the refrain of the song and sing it through once alone. Just before he is finished, a second singer will start, and he also sings alone. The third time through all singers who know the song join in and the song is sung through three or four times.

The dancers usually begin to dance during the second solo rendition, dancing slowly at first. When the entire chorus joins in, the dancing becomes more spirited, and with the last chorus of the song may become quite animated. After each

dance there is a short rest period; sometimes the drumming continues during this period.

There has been a great deal of change in Grass dance costume in recent years. The crow belt, formerly an article of apparel characteristic of the Grass dance, has disappeared in many localities. The Upper Yanktonai and Hunkpapa of the Standing Rock Reservation in North and South Dakota, as well as the Sisseton near Sisseton, South Dakota, no longer use this ornament. The Lower Yanktonai on the Crow Creek Reservation in South Dakota and the Yankton living on the Yankton Reservation in South Dakota use the ornament only occasionally. On the Rosebud, Lower Brule and Pine Ridge reservations of South Dakota the article is still a regular part of the dance costume, although its ritual significance has been largely lost.

The Dakota Grass dance occupies a position unique among Dakota ceremonials in having changed its form, through the years, at a rate somewhat in keeping with the swift changes in the rest of Dakota culture. This is probably one of the reasons this dance has survived while other ceremonials, far more important but less flexible, have, through their very elaborateness and difficulty of performance, been dropped by the tribe.

The dance is colorful, its music stirring, and it fully reflects the love of excitement and combat which was such an important factor in the old Dakota way of life. The dance serves, to a degree, as a meeting place for the new and the old in Dakota culture. Older people sometimes frown upon the *Kahomini* and the Forty-nine dance as "half breed" innovations, but in the Grass dance young and old can meet on common ground.

The Grass dance seems to be a sort of "national anthem" for the Dakota. Any person who still thinks of himself as a Dakota will usually be found in one of the great summer camps when a dance is being held, although he may not personally take part. It is at the Grass dance that soldiers are honored upon entering or leaving the service and where families are ceremonially released from mourning. It is in the crowd of spectators at a dance that young people have the best opportunity to meet one another. Likewise, it is in the "Omaha house" that the tribal council traditionally meets. Thus, to paraphrase the statement "There will always be an England," we might say there will always be Dakota, so long as they continue to perform their dance.

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RECONNAISSANCE IN SOUTHWESTERN ASIA

HENRY FIELD

SOUTHWESTERN ASIA stands on the crossroads of Asia, Africa, and Europe. Here developed the great civilizations of the Nile Valley, Mesopotamia, and Persia.

Since 1925 I have worked on three problems:[1] (a) the distribution of Palaeolithic sites; (b) the anthropometry of the living peoples; and (c) the anthropogeography of the area.

During February–June, 1950, the Peabody Museum-Harvard Expedition[2] to the Near East conducted a reconnaissance survey in Lebanon, Syria, Iraq, Persia, Kuwait, Bahrain, Qatar, Trucial Oman, and across northern Saudi Arabia.[3]

The main purpose was to fill in some lacunæ, which were known to exist. The following data have been arranged by country.

LEBANON AND SYRIA

The abundance of caves, rockshelters, springs, wadis, pleasant valleys, and the Mediterranean shoreline formed an attraction for ancient man since Palaeolithic times.

During the past fifty years superb collections of stone implements have been assembled.[4] The stratigraphy has been worked out by geological observations in relation to the archaeological sequence. Many publications[5] have resulted in a relatively clear picture of the main cultures of Lebanon and Syria and their rela-

1 Mainly in Syria, Jordan, Iraq, Persia, and the Caucasus. For references see my *Bibliografia* (Boletin Bibliografico de Antropologia Americana, vol. 9, 1946, Mexico, 1947).

2 The staff in Lebanon, Syria, Iraq, and Iran included Robb White, photographer and general assistant, and Yusuf Lazar, an Assyrian botanical and zoological collector. Local assistants were recruited in each country.

3 See *Reconnaissance in Saudi Arabia* (Journal, Royal Central Asian Society, vol. 38, pt. 2, 1951).

4 In the American University, French Faculty of Medicine and St Joseph University in Beirut (Beyrouth).

5 Cf. Jean Haller, *Aperçu sur la Préhistoire de la Syria et du Liban* (Dél. Gén. de France au Levant, Sect. Géol., Notes et Mémoires, vol. 4, pp. 48-58, esp. Bibliography); and René Wetzel and Jean Haller, *La Quaternaire cotier de la Région de Tripoli (Liban)* (*idem*, vol. 4, pp. 1-48, Beyrouth, 1945).

tionship with Palestine. The distribution of surface sites[6] now begins to form a definite mosaic. It was this latter phase which was of especial interest to us. Consequently, we searched for surface sites either with flint implements or pottery in eastern and northeastern Syria, a far less known area than central and western Syria and Lebanon. Notes on two archaeological monuments have been included.

Buildings—1. At Qasr el-Hair, between Qariateine and Palmyra, stands a large ruin with a rectangular courtyard. Many graffiti decorate the walls. On a fallen limestone block beside the road had been cut a fourchée-cross enclosed in three circles.

2. Qala'a es-Sukhura, a ruined castle on top of a six hundred foot hill, at the eastern end of Jebel Abdul Azim due west of Hassetché on the Khabur River. Two of the four corner towers remained in good condition. The western tower had an ornamented vaulted roof (12 ft) with an octagonal hole in top. The protected area was 120 feet square with steep slopes. Many wells (15-45 ft) had been dug. Sherds and a few flint flakes were found. On the eastern slope was a small rockshelter with a nearby dry well, but no sign of habitation.

Flint Implements and Pottery—1. At Rejm Rouhaibé between Rouhaibé and Airoud on the Damascus-Palmyra road flints were found.

2. A few flint flakes were collected on low rise of Rejm Rouhaibé, 7.3 miles northeast of Qtaife on the road from Damascus to Qariateine.

3. Tell el-Wusta (75 ft) on left of road from Airoud to Aatné. Collected sherds and flint flakes near a partly-excavated hearth.

4. About six hundred paces south of Telegraph Pole 335/9 flints were found on a slope facing south above a small wadi.

5. Flint flakes were picked up at Mile 13 on left of track from Iraq Petroleum Company (IPC) Station T-3 eastward toward T-2.

6. At Mile 20 from T-3 toward T-2 flakes were found.

7. On top of a low hill on right of track at Mile 22.7 from T-3 toward T-2 flakes were collected.

8. A few flakes were found in a sea of flint at Mile 37.5 east of T-3.

9. On a low mound three miles west of T-2 near the track from T-3 flakes were obtained.

6 Through the kindness of Mr Harper Kelley in the Musée de l'Homme, Paris, in February, 1950, I examined the collections from Syria. Levalloiso-Mousterian: Abou Afsa and Ain Arus (Arouss) near source of Balik River, 70 km east of Euphrates and 6 km south of Turkish border. Aurignacian: grand abri, Antélias. Upper Paleolithic: Batroun, Nahr el-Kelb, and Palmyra. Miscellanea: obsidian at Tell Abiad near Raqqa; Madamié south of Damascus; Koneitra and Catana southwest of Damascus; near Damascus, Mezzé, Hameh and Plage de es-Saa; Moumbata, Tarryé, Sasnyé, Hama, Kalaat Yahmour, Slenfé, 50 km east of Latakia, near Deir ez-Zor; and Bac de Soussa on right bank of Euphrates near Abou Kemal.

10. On a low mound with a limestone outcrop three miles northeast of T-2 a fine series of flint implements, including a delicately flaked spearpoint, was found.

11. At Mile 20 due north of T-2 on the track to Deir ez-Zor flakes were collected.

12. On a low mound at Mile 31.3 from T-2 toward Deir ez-Zor some flint flakes were picked up.

13. Flint implements were collected beside the track due north of T-2 at Mile 32.0 south of Deir ez-Zor.

14. Sherds and small flint flakes were obtained on two low, grass-covered mounds six and ten miles respectively from Hassetché due west toward Jebel Abdul Aziz.

15. Pottery was collected on a low mound standing beside west bank of Khabur River about five miles north of Hassetché.

16. Tell Mejdal (100 ft), five miles north of Hassetché on west bank of Khabur River, where hundreds of sherds covered the top and slopes. Flint flakes and one microlithic obsidian nucleus were found.

17. Near Mile 15.0 just before crossing Wadi Swaab (150 paces wide) a rockshelter may be seen midway up a three hundred foot escarpment. Some flints were collected on the scree slope below rockshelter. No flints were found in the bed of the Wadi Swaab at this point.

18. Midway through area drained by Wadi Rutga on summit of a fifty foot escarpment on left of track at Mile 35.0, many worked flints were collected.

19. At the point where the track from T-2 to Abou Kemal climbs onto a plateau with the Wadi Rutga on the right, a splendid series of flint implements, including a handaxe, many large nuclei, choppers, scrapers, and blades were found within a five acre area.

This is one of the most important sites in the North Arabian or Syrian Desert. The quality and deeply patinated condition of the flint is reminiscent of that from the Rutba area in western Iraq and Jebel Thlathakhwat in southeastern Jordan.[7]

The wide distribution of the surface flint implements from Koneitra to the Khabur and from Ain Arus (Arouss) to Abou Kemal indicate that man in various Palaeolithic and Neolithic phases of culture migrated across the North Arabian or Syrian Desert. Future work will complete the mosaic.

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7 Collections made in 1925-1926 by L. H. Dudley-Buxton and Henry Field and during Field Museum North Arabian Desert Expeditions, 1927, 1928, and 1934.

Inscriptions—1. On two limestone boulders[8] lying on top of a mound at Mile 20.0, north of T-2, are hammered Himyaritic characters resembling camel brands (*wasmat* or *wusûm;* sing. *wasm*).

IRAQ

In order to fill in some lacunæ in the archaeological survey[9] of the North Arabian or Syrian Desert, a visit was made to the Qaara Depression, northeast of Rutba. Fifteen miles west of Iraq Petroleum Company Station H-2 rises the basalt-strewn hill (100 ft) known as An Nasir. Flint implements, bearing chocolate-brown patina and desert varnish, were collected on the slopes and summit. Several boulders were covered with inscriptions and camel brands.

Continuing down the winding wadi leading into the Qaara Depression, flint flakes were found on the right of the track about three miles from the entrance opposite an escarpment (125 ft). Driving directly ahead to Tell el-Afaif, which dominates this part of the Qaara (twelve by ten miles with hills all around), we found hundreds of flint flakes and many typologically Palaeolithic implements on the southern and eastern slopes. A small rockshelter, facing south, near the summit (250 ft) showed no traces of human occupation.

On the eastern slope just below the peak a red ocher mine was found. Scattered around were large flint choppers still used by the Beduins for removing the red ocher, now used, as for the property mark on sheep. This was probably a source of red paint for the Sumerians and Babylonians, possibly for the Palaeolithic hunters and their wives.

At the southwestern corner of the Qaara Depression unpatinated flint flakes lay on the surface near four shallow (60 ft) wells. Many of these had been flaked by Beduins as strike-a-lights. Dr René Wetzel, Iraq Petroleum Company geologist, who was our guide, collected some flint flakes from Bir Mulussi, wells on the escarpment at the western end of the Qaara Depression.

From an unsearched area about twenty-five miles north of Ana some flint flakes were collected and presented to Peabody Museum.[10]

In northeastern Iraq a few flakes were found beside the road four miles

8 Information and drawing received in a letter dated March 15, 1950, from Sydney Watson, IPC Geophysical Party No. 5.

9 See Henry Field, *Early Man in North Arabia* (Natural History, vol. 29, pp. 33-44, New York, 1929); *The Ancient and Modern Inhabitants of Arabia* (Open Court, vol. 46, pp. 847-871, Chicago, 1932); *The Antiquity of Man in Southwestern Asia* (American Anthropologist, vol. 35, pp. 51-62, 1933); *Sulle caratteristiche geografiche dell' Arabia settentrionale* (Bolletino della Reale Società Geografica Italiana, vol. 11, pp. 3-13, Rome, 1934); and *Reconnaissance in Saudi Arabia* (Journal, Royal Central Asian Society, vol. 38, pt. 2, 1951).

10 Late in 1949, by Sidney Watson, Geophysical Party No. 5 of Iraq Petroleum Company.

east of Erbil (ancient Arbela). On the scree slope below Havdian Cave at the foot of Jebel Baradost near Rowandiz Gorge, hundreds of microlithic flakes were found. A flint handaxe and some choppers were found beside a wadi near Mile 21 from Kirkuk to Sulaimaniya. At nearby Barda Balkha,[11] four kilometers east of Chemchemal on the Kirkuk-Sulaimaniya road, Fuad Safar guided us to the irregular monolith (12 ft) of sedimentary breccia. On the grassy slopes dozens of large handaxes were picked up in a short time; the majority were well-rolled. This is the only site in northeastern Iraq with Lower Palaeolithic *coups-de-poing*. The cultural links to the southwest have been found in the Wadi Rutga west of Abu Kemal in Syria, in western Syria, and along the coast of Lebanon and Palestine, and in the Wadi Arabah near Petra in Jordan.

In collaboration with the Directorate-General of Antiquities, the Peabody Museum-Harvard Expedition[12] sank two trial trenches in Diyan and two in Pastun[13] (Bastoon) Caves 3,500 feet on Jebel Baradost above Rowandiz (Rowanduz) Gorge. From April 18-27 the principal finds included hundreds of sherds, many animal bones and a few flints. No Palaeolithic implements were found, as had been anticipated, just above bedrock. These caves have been inhabited by hunters and shepherds at least since the Hassuna period[14] (*circa* 5,000 BC). The greater part of the pottery is of hand-made, coarse gray or dark brown ware, tempered with straw. At Diyan the earliest identifiable types are true Hassuna ware in forms, texture, quality, and paint. Among this group is a fragment of a husking tray bearing deep incisions on the inner surface. Al-Ubaid ware could also be identified; for example, a greenish sherd with a black design and a miniature jar with a lug and decorated with red paint. Other sherds could well be attributed to late Ubaid or early Uruk ware. Two fragmentary cooking pots resemble those from the upper levels of an Ubaid settlement at Eridu (Abu Shahrain), formerly a port on the Persian Gulf.

Sherds were collected at Barda Balkha: these were wheel-made, pinkish

11 Discovered in May, 1949, by Dr Naji al-Asil, Director-General of Antiquities, and Fuad Safar (see Sumer, vol. 5, no. 2, pp. 205-206, and pl. 2, Baghdad, 1949). Barda Balkha in Kurdish (Kermanji) means "standing stone" or "stone to lean against." This megalithic monument is still worshipped as a phallic symbol by barren women. The nearest large megalithic monument stands near El Jidd west of Rutba Wells, three hundred miles to the southwest.

12 For this phase we were accompanied by Fuad Safar of the Department of Antiquities and Dennis Batten, speleologist of the Iraq Petroleum Company. Personnel included Philip Dinkha, an Assyrian, 12 Kurds, and 12 Assyrians from Havdian, 6 Shergatis, and 2 Iraq police. We camped outside these caves, food and water being brought daily by horse and donkey. I had visited Diyan with Philip Dinkha in 1934.

13 A human femur, blackened by fire, was found in the lowest stratum.

14 See Fuad Safar, *Pottery from Caves of Baradost* (Sumer, vol. 6, no. 2, pp. 118-123, Baghdad, 1950).

red, and were attributed to a recent historical period. Sherds were also picked up at (a) Tell Mattarah[15] near Kirkuk; (b) three low mounds 70-75 miles southeast of Baghdad; (c) Tell Abu Hatab due east of Kish;[16] and (d) Tell el-Izba, east of Tell Abu Hatab in Hillah *Liwa*. A few Chalcolithic or more recent flint flakes were picked up near this mound.

A representative series of animal bones[17] were collected deep inside a cave leading off a pothole or sinkhole, five miles south of Iraq Petroleum Company Station K-3. A small series of fragmentary human skulls, mainly calvaria, was salvaged for study at Harvard.

Anthropometric data were recorded on 533 Assyrians[18] and 126 women and 41 men at the Nippur[19] excavations.

Some tribal notes[20] were recorded from Beduins.

IRAN

Our objectives[21] were to record anthropometric data on Bakhtiari tribesmen and Lurs and to search for Palaeolithic sites in Luristan.

Flint implements or flakes were found at (a) Manouchcharabad, southwest of Dizful in Khuzistan; (b) Papila, on the Wadi Kahunak, southeast of Dizful; (c) Konji rockshelter,[22] seven miles southwest of Khurrumabad in Luristan; (d) Sareb-Darreh, northwest of Khurrumabad; and (e) two rockshelters overlooking Khurrumabad.

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15 Partly excavated during 1949 by Dr Robert Braidwood in behalf of the Oriental Institute of the University of Chicago. He is now excavating Qalaat Jarmo east of Chemchemal.

16 Site of Field Museum-Oxford University Expedition from 1923-1934.

17 Including camel, members of the *Equidæ*, sheep, goat, wolf, fox, hyena, and jackal. These are now being identified at the Museum of Comparative Zoölogy, Harvard. Mr Dennis Batten guided us to this site.

18 At Royal Air Force Headquarters, Habbaniya, through the kindness of Air Vice Marshal J. N. Boothman.

19 By Dr Donald McCown in behalf of the Oriental Institute of the University of Chicago and the University Museum of the University of Pennsylvania.

20 The Al bu Nimr of the Dulaim corrected the following errata on page 99 in my *The Anthropology of Iraq, Pt. 1, No. 1, The Upper Euphrates* (Anthropological Series, Field Museum of Natural History, 1940): Al bu Mania for Al bu Mani; Al bu Samatah for Al bu Samalah; Farhan al Jadia for Farhan al Jadi; and Baddar al Thahi for Baddar.

21 Approved and facilitated by Ambassador John C. Wiley and G. A. Dooher, who sent Kuresh Shahbaz as interpreter with us. He also acted as recorder. Permission was granted by the Department of Antiquities, which sent H. U. Samadi as their representative.

22 Samadi and I sunk a small trial pit in the center of the entrance to this rockshelter (50 × 60 × 25 ft). Six feet of overload had been removed onto the platform. Typologically Upper Palaeolithic implements were found. This site deserves excavation, for its impregnability to sudden attack, its southern exposure, and accessibility to plentiful water make it a likely spot to find *Homo iranicus* and his cultures.

Sherds were collected at (a) Chagar-Mich, a tell (70 ft) three miles east of Shalgahi, south of Dizful in Khuzistan; (b) Pahvandeh Tepe, southeast of Dizful on road to Shushtar; (c) Tepe Zagheh, forty-two miles south of Khurrumabad in Luristan toward Dizful; and (d) Tepe Bahrain near Dorud.

Anthropometric data[23] were recorded on 150 Bakhtiari tribesmen, 70 Lurs between Khurrumabad and Dorud, and 50 Kurds from northwestern Iran. The latter were studied at Habbaniya in Iraq.

Zoölogical and botanical collections for Harvard were made in Khuzistan and Luristan.

KUWAIT

On May 21 I flew by Iraqi Airways from Baghdad to Kuwait.[24] As a guest of the Kuwait Oil Company (KUOCO) I stayed for three days mainly to discuss with Colonel and Mrs H. R. Dickson the desirability and possibility of recording anthropometric data and to find out whether Stone Age sites had been located.

Archaeology—At Magwa Dr R. M. S. Owen, resident geologist, suggested a visit to Madaniyat, a low hill with ruins due west of Magwa, and Jebel Gurain. Mr W. E. Boyd of KUOCO drove me all day in search of ancient habitations. The following sites were visited:

(a) Madaniyat, three miles due west of Magwa. Flints were found; none worked. About three miles due west of Madaniyat lies a low (15 ft) mound North 50° E from Magwa. On the summit facing southwest are two stone-walled enclosures, the stones being flush with the ground. The most southerly measures ten by ten feet, with an opening in the southwest corner. The other enclosure is twelve feet square. These are either buildings, whose upper courses have been removed, or graves. Trial trenches would answer the question of their purpose. On the slopes and summit I found some worked flints. The quality of the material is very poor.

(b) Due south of Warah stands a roughly circular tar pit (250 ft) on the left of the paved road before reaching Burgan Hills directly ahead. Colonel Dickson had described finding many worked flints in this area, but we were unable to find a flake owing to a recent sandstorm.

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23 See Henry Field, *Contributions to the Anthropology of Iran* (Anthropological Series, Field Museum of Natural History, vol. 29, pp. 1-706, 1939).

24 For reference to Kuwait, its history, ethnology, and folklore see H. R. Dickson, *The Arab of the Desert* (London, 1949). Since 1926 Mrs Dickson has sent fauna to the British Museum; nothing has yet been published. Regarding flora see B. L. Burtt and P. Lewis, *On the Flora of Kuweit: I* (Kew Bulletin, 1949).

(c) We also searched on top of Burgan Hills east of road, but found no worked flints.

(d) On the slopes of Jebel Gurain (the "twin-horned"), a prominent hill on the southern boundary between Kuwait and the Neutral Zone, we found some worked flints under difficult conditions; wind speed, 50 mph., temperature 112° F.

(e) Colonel and Mrs Dickson very generously presented to the Peabody Museum the finest specimens from their collection of stone implements mainly from the Burgan Hills and Jebel Gurain. These specimens of poor quality, light-colored flint appear to be Neolithic or later.

Anthropology—On the streets and in the *suq* at Kuwait the racial types are so mixed as to make any random sample worthless. There are Saudi Arabians, Persians, Baluchis, Indians, and many with Negroid features. There are, however, two possibilities for study: (a) Beduin groups far from the coast, probably to the southwest; and (b) the Sulubba (Sulaib) encamped outside the west gate of Kuwait. This is the largest concentration of Sulubba I have ever seen; there must be more than one hundred families. Through Colonel Dickson I met the acting Sheikh of Kuwait, Sheikh Abdullah bin Mubarak, for the Sheikh was on a visit to Riyadh. Permission was granted to measure fifty Sulubba males, provided they acquiesced. After considerable discussion, they refused without a representative of the Sheikh. An armed escort was provided, but I canceled the request, fearing the more than customary difficulties.

BAHRAIN ISLAND

Arriving by plane from Kuwait, Sheikh Sir Salman bin Hamed al Khalifa of Bahrain gave permission for the recording of anthropometric data on 45 Beharna at Jid-Hafs near Manama; these are believed to be descendants of the aboriginal inhabitants. In addition, through the recommendation of Mr C. Dalrymple Belgrave, Adviser since 1926 to the Sheikh, permission was granted to open a tumulus as well as to collect surface archaeological material and zoölogical and botanical specimens.[25] the following results were obtained:

(a) With Mr T. G. Bibby of Petroleum Concessions, Ltd. I drove due south to Jebel ed-Dukhan in the center of the island. There are several peaks, the highest being four hundred fifty feet above sea level. Some sherds were collected on the slopes. A small rockshelter ($10 \times 6 \times 4$ ft) was examined on

25 At Jid-Hafs the Beharna children collected a good series of turtles, lizards, and frogs. Some shells were obtained at Umm as-Sabaan and on the shore just north of Zallak due west of Jebel ed-Dukhan, where a few herbarium specimens were collected.

the inner western rim. No pottery was seen. Nearby a small cave (15 × 35 × 6 ft) was searched as well as the scree slope. Neither pottery nor flints were found.

(b) Visited two large (50 ft) opened tumuli near Ali and collected sherds on surface.

(c) A tumulus[26] (15 ft) was opened under the direction of Mr Belgrave by sinking a shaft through the center down to plain level. No construction work of any kind appeared. However, at a depth of eleven feet, in the left wall of the trench a handled vessel was unearthed; this was placed in the temporary museum in the Adviserate. Leaving Mr Bibby in charge of the work, for I had to leave for Saudi Arabia, the following notes were received from him at the conclusion of the work:

"The tumulus proved to be a multiple burial, like most of the mounds in that area. From the symmetrical arrangement of the graves, I was confidently expecting two more on the eastern side to complete the ring, but they were not there. The center grave was lower than the rest, its top being on a level with the original ground level, whereas the others were about four feet above ground level and about three feet deep so that they did not even dig into the original ground. The center grave was the only one which was roofed, except for one roofing stone on grave No. 3. All the graves were built of small stones set in mortar and plastered smoothly over inside. The 'ring'-graves had their outer walls broken unevenly down. All graves contained bones, as far as I could see all human, but in complete disorder and so badly corroded as to be completely unpreservable. Apart from bones only four objects were found: (a) a pottery vessel; (b) a bead in grave No. 2; (c) a shallow bowl, unbroken, in blue-green glaze from grave No. 1; and (d) a similar bowl, showing signs of burning and full of ashes, discovered on the roofing stone of grave No. 3.

"I should be inclined to believe that grave No. 1 was laid first with a smaller tumulus, the other graves being added in the sides of the original barrow to save earth. The ransacked and broken down appearance of the outer graves and the absence of roof stones suggests to me later robbery in search of stones for building or lime-making. There are no similarities, apart from the tumulus itself, between these graves and those around Ali. The latter are entirely single-

26 On Manama there are about 50,000 tumuli, the oldest being about 2500 BC. It seems probable that Bahrain was a sacred burial place to which bodies were brought as are those of Moslems to An Najaf in Iraq. See Ernest Mackey, "Bahrein" (in *Bahrein and Hemamieh*, British School of Archaeology in Egypt, vol. 47, pp. 1-29, London, 1929) and P. B. Cornwall, *On the Location of Dilmun* (Bulletin, American Schools of Oriental Research, no. 103, pp. 3-11, October, 1946).

grave mounds, mainly, except the largest, unplastered, mostly with alcoves in the east end, and never containing unbroken pottery."

QATAR PENINSULA

As the guest of Petroleum Development Qatar (PDQ) I was flown on May 27 from Bahrain Island to Dukhan, midway down the western coast. Dr R. V. Browne, geologist, drove Mr T. G. Bibby and myself across the Peninsula to Umm Said near the east coast, and back via Doha, Al Duhail, Rut al-Faras to Dukhan.

Archaeology—No Stone Age implements have been found on Qatar Peninsula. Ruins, probably Portuguese or later, are recorded near Ras Uzairij on the northeast coast at Az Zubair, Halwan, Al Rebaija, and Fahahil, and at Umm al-Hul between Umm Said and Doha. Along the coast in many places ruined villages may be seen. According to several informants, when the villagers become tired of their situation, they abandon the site and move elsewhere along the coast. This does not apply to the area south of the northern limit of the shifting, singing sand dunes. After examining the topographical sheet of Qatar, Umm el-Kahab, northeast of Doha, was selected as the most likely place for Stone Age traces in the vicinity of Dukhan, for here stand out several low hills, being outcrops of Eocene Abaruk beds of the Bahrain formation; nearby are several wells. Permission was also granted to search for traces of ancient man along the main road to Umm Said, northward to Doha, and back to Dukhan along the old road by way of Al Duhail and Rut al-Faras.

However, no one gave much encouragement for this reconnaissance, because neither flint flakes nor pottery had been found by the Iraq Petroleum Company (IPC) survey parties except modern sherds near recently abandoned villages.

Anthropology—The inhabitants may be divided into three groups: (a) Beduins; (b) workmen at Dukhan; and (c) the townspeople of Doha. There was obviously considerable racial admixture except among the true nomads.

There was little opportunity to see more than a handful of Beduins, Beni Hājar and Manasir; these had the characteristic long, narrow head and face, and were short in stature, with small bones. The hair and eyes were uniformly dark brown.

The workmen at Dukhan were racially mixed, ranging from some South Arabian types to almost three-quarters Negro plus Arab.

In Doha there is a high percentage of Negro blood, the remainder being South Arabian, Persian, Baluchi, Indian, and other stocks.

Anthropometric data, therefore, would only be of value if obtained on the

principal Beduin groups such as the Beni Hājar, Al Manasir, Al Naim, or some of the smaller nomadic elements, who either live on the Qatar Peninsula or migrate there from Saudi Arabia. On the other hand, this is of little encouragement to the physical anthropologist because samples of these tribes may be obtained elsewhere and in greater concentration. To measure one hundred Beduins from one tribe in Qatar would be a major problem, for the wells are few and far between and there are no large encampments.

At El Afi, 1.3 miles north of Umm Said I measured[27] an Al Manasiri, aged 35; T. G. Bibby acted as recorder.

Tribal Notes—According to Mr A. J. Wilton, Political Officer in Doha, the total population of Qatar is about 20,000 under Sheikh Abdullah bin Jasim al Thani, who lives in Doha. Among the settled tribes, formerly most powerful, are Al Maadhid from whom Sheikh Ali is descended and the Al bu Quwwara, who inhabited villages in the north and northeast, pearling in the summer and grazing in winter. The leading families with whom the ruling family may marry and the majority of whom live in Doha include Asiri, Khalaifi, Atiyah, and Suwadi. One peculiarity of the settled Qataris is that they stay rarely in one village for more than a generation or two. The headman selects the site and people build around his house. After his death, they move.

Several sections of Beduin tribes migrate periodically from Saudi Arabia into Qatar. These include the following:

1. Al Naim of Trucial Oman became detached and fluctuate between Bahrain and Qatar. Recently evicted from Qatar because of serious disputes regarding a burial ground on the northwest coast, they have now been granted permission to return at will. About thirty tents are involved; these appear to be completely detached from the main body of the tribe.
2. Al Murra move across from Rub' al Khali when grazing is reported good.
3. Al Manasir migrate northward from Saudi Arabia.
4. Al Ajman occasionally visit Qatar.
5. Beni Hājar (200 tents) are believed to be indigenous to Qatar, but owe allegiance to Ibn Saud.

The following data were supplied by Sheikh Mansur ibn Khalil ibn Muhsin ibn Hazza ibn Mohammed ibn Rashid ibn Mana ibn Ghanim ibn Shahwan ibn

27 GOL 188, GB 141, MFD 123, Biz.B 138, Big.B 111, TFH 137, UFH 77, NH 58, NB 36, EH 60, and EB 30. Skin color swarthy; hair form curly, texture medium, head hair quantity double plus, body hair absent, some grayness on head and beard, hair and beard black; eye color dark brown, sclera clear; eyebrow concurrency absent, browridges small; nasal profile straight, tip thickness and alæ average; occlusion marked overbite; teeth lost 6, wear double plus, caries some, crowding plus; and ear lobe attached, size and protrusion average.

Hajir ibn Qohtan. He is blind but famous throughout Qatar for his knowledge and fabulous memory.

1. Beni Hājar, meaning "Beduins who migrated with the Prophet," are originally from Nejd. The greater part of the tribe lives in Saudi Arabia, there being some in Qatar (500 tents), Al Hasa, and Nejran.
2. Al Mahanda live at Khor near Doha: 2,000 persons.
3. Al Hibab near Umm Said: 100 tents.
4. Al Manasir: 30 tents.
5. Al Murra: 20 tents.
6. Al Maadhid. Family of Jasim al Thani from Beni Tamim. Also connected are the Salutah, Sudan, who live in Doha (ancient Beda), Mualit, and Mahusit: 3,000 persons.
7. Al bu Quwwara near Fuarit north and northeast: 600 tents.
8. Al Mananah live in north near Aba Thluf: 200 tents. No camels.
9. Al Saada live at Ruwais: 100 tents.
10. Al Chebissa live at Gemail (50 tents) and at Khweir (40 tents).
11. Al bu Rumeih live at Umm el-Mai; 30 tents.
12. Al Khalaifat in Doha: 50 houses.

In the interior of Qatar live Al Chaaban (100 tents), Al Muraikhat (50 tents), and Al Naim under Sheikh Selman of Bahrain (200 tents).

The following is a list of their camel brands:

Tribe	*Brand*	*Location*
Beni Hājar Al Mahanda		On right side of neck
Al Hibab		On left leg
Al Maadhid Al Saada		On right leg
Al Manasir		On right cheek
Al bu Quwwara		Under right eye
Al Chebissa		Right side of neck
Al bu Rumeih		On right leg

Al Khalaifat, Al Salutah, Al Sudan, Al Mahushit, and Al Mualit use the same brand as Al Muadhid and Al Saada. Mansur commented that the sigmoid mark of the Beni Hājar depicted a snake and that the Al Manasir brand is called *mishghrarr*.

Three Beni Hājaris beside Umm al-Kahab wells supplied the following notes, but referred me constantly to Sheikh Mansur whom they said knew the history of all the Beduins of Qatar, especially the Beni Hājar. The tribal list, obviously exaggerated, included: Beni Hājar (500 tents), Al Manasir (1,000), Al Murra (1,000), Al Mahanda (1,500), Al Maadhid (800), Al Naim (600), and Al bu Quwwara (600).

Miscellanea[28]—1. At Kilometer 67 from Dukhan to Umm Said we turned due north for about 1,500 paces to a cave with a thirty by twenty-five foot entrance. At the bottom of the steep shaft (150 ft) there was water covered with algae, specimens of which were collected as well as rock crystals. No traces of ancient habitation were found, although this is the only water supply in this area. Outside some flint flakes were seen; none worked.

2. At the southwestern edge of Duhail village a pothole or sinkhole (100 feet in circumference and 30 feet deep) was visited. A small cave (35 ft) contained tiny bones, probably *Chiroptera,* and tracks of wolf, jackal, or hyena. On a sloping shelf outside the cave lay thousands of well-preserved animal bones, including those of *Equus, Bos,* wolf, jackal, hyena, fox, gazelle, sheep, goat, etc. Three fragmentary human skulls were also found; these were dolichocephalic with large parietal bosses, typical of the basic Mediterranean type as represented by the modern Beduins of the Qatar Peninsula. The animal bones are now being studied in the Museum of Comparative Zoölogy at Harvard.

28 Sheikh Mansur and his two sons listed the following animals as living in Qatar, mainly in the sandy and rocky interior: fox (*hussaini,* loc. *thaleb*), hare (*arneb*), gazelle (*ghrazal*), wolf, (*deeb*), hyena (*thubba*), jackal (*wawi,* loc. *tufaa*), jerboa (*jerboa*), black mouse (*far*), brown and white desert mouse (*giridhi*), horned viper (*Abu gurain*), small snake (*nadūs*), desert monitor (*Varanus* sp., Ar. *waral*), large lizard with spiny tail (*thubb*), small lizards (*Abu brais, hayit sulaiman, sahhaliya,* loc. *sahlibba*), hedgehog (*gumfut,* loc. *daleg*). Among birds are the eagle (*nisr*), turkey bustard (*houbāra*), small bustard (*kirwan*), vulture (*agab*), hawk (*sakr*) used for hunting *houbāra,* not gazelle, hoopoe (*hidhid*), and a small bird with striped wings and a curved beak called *asrad*. There are no storks (*Hajji luglug*), ostrich (*naame*), cheetah (*nimr*), nor porcupine (*nis* or *thrumban*).

Mansur described an animal (*aniza*) with vulpine ears and the size of a fox; this is extremely rare. Beetles (sing. *khunfusana*) are common, although the dung beetle (*gubban*) is rare.

Dr R. V. Browne, IPC geologist, supplied the following list based on his survey work in Qatar: gazelle, jackal, fox, antelope (? oryx: seen from the air), mongoose (six imported recently to Dukhan from Bahrain), mice, hoopoe, sand grouse, flamingoes (on islands), courser (long-legged solitary), desert lark, ducks, black-throated chat, and as migrants, swallows, swifts, and warblers.

TRUCIAL OMAN COAST[29]

As the guest of Petroleum Development Trucial Coast (PDTC) three days were spent at Dubei with Mr E. F. Henderson, who supplied the greater part of the tribal information. Local political conditions made it inadvisable to travel either inland beyond a few miles or far to the northwest along the coast without considerable advance preparation. This was impossible in the limited time at my disposal.

Archaeology—No traces of Stone Age sites were reported by the PDTC survey parties. Portuguese ruins are reported along the coast north of Sharjah.

I selected Jebel Ali south of Dubei near the shore as the most probable site of ancient habitation within my limited zone. This hill with a PDTC cairn on the summit (67.0 m above sea level) covers at least one hundred acres. No flint was found. However, since the surface is covered with gypsum, flints are especially hard to find. Some coarse sherds were collected on the surface. A narrow fissure at the end of a small wadi was searched for bones; none were found. Some herbarium specimens were collected.

Since Jebel Ali is the solitary peak along the central coast, it must always have been a well-known landmark.

At Ras al-Kheima, northeast of Sharjah, a ruin with buildings near the shoreline was described. Here pottery and coins have been found. I was shown a blue and white teapot with figures and elaborate foliage; this was from a two-storey house. Sheikh Saq bin Mohammed bin Salim has forbidden all digging in these ruins. A thorough search of the Ras al-Kheima area is indicated together with permission to sink some trial trenches.

On the island of Umm Munar, due east of Abu Dhabi, extensive ruins are reported but neither description nor photographs are available. This site should be studied.

Anthropology—In Sharjah and Dubei the population was extraordinarily mixed, as are most seaports. In addition to considerable Negro blood, there are Persians, Indians, Baluchis, Muscatis, Beduins from the interior of Oman or Saudi Arabia, and many others. Measurements on any of these would prove worthless. However, a selected sample from Bireimi (Buraimi) Oasis, eighty miles airline southeast of Abu Dhabi, and a series of Beduins (Beni Kitab, Beni Kaab, or Al Naim) would be of value. Bireimi is a most interesting place, lying at the northern end of Jebel Hafit. During the cool weather Bireimi may

29 See Wilfred Thesiger, *Desert Borderlands of Oman* (Journal, Royal Geographical Society, vol. 116, nos. 4-6, pp. 137-171, December, 1950).

be reached by desert-equipped vehicles without too much difficulty. However, when the surficial sands become heated, the tires sink in deeply.

The most interesting group are the Shahu, who live northeast of Ras al-Kheima. These wild people live in caves near the foreshore and in the hills. Their language is said to be unknown. Little attempt as yet has been made to deal with them. Nonetheless, they deserve study when tamed.

Coastal Rulers—The following areas are listed from north to south:

1. Kelba. Ghafiri. Rulers, Qawisim. Ruler, Sheikh Hamid bin Said bin Hamed. Prominent man, until now regent, Khalid bin Ahmed.

2. Ras al-Kheima. Ghafiri. Rulers, Qawisim. Ruler, Sheikh bin Mohammed bin Salim. Local tribes: Zaab, Khawatir, Habus, Shahu, and a few Beni Kitab.

3. Umm al-Quweim. Ghafiri. Rulers, Al Ali. Ruler, Ahmed bin Rashid. Son, Rashid bin Ahmed.

4. Ajman. Ghafiri. Rulers, Bu Kharaibam. Ruler, Sheikh Rashid bin Hamid. Son, Ali bin Rashid.

5. Sharjah. Ghafiri. Rulers, Qawisim. Sharjah (Sharqah) is the old Qawasim (pronounced Jawasim) sect. Ruler, Sultan bin Saqr al Qawasim. Brother, Mohammed bin Saqr.

6. Dubei (Dubai). Hinawi. Ruling family, Al bu Falasah, an old sub-section of the Beni Yas. Ruler, Said bin Maktum al-Hashi. Son, Rashid bin Said. Local tribes: Beni Yas and a few Beni Kitab, the latter unofficially.

7. Abu Dhabi. Hinawi. Ruling family, Al bu Falah. Ruler, Shakbut bin Sultan bin Zaid. Brothers, Hiza, Khalid, and Zaid. Local tribes: Beni Yas and Manasir.

Tribal Notes—The principal tribes from north to south are as follows:

1. Sharqiyin (loc. Sherjin). Sheikh Mohammed bin Hamid al Sharqi (Sherji). Live at Fujariah near Kelba and to the south.

2. Beni Kitab (Qitab). Ghafiri and Sunni. Sheikh of northern section, Mohammed bin Ali Huwaidin. Sheikh of southern section, Mohammed bin Ali bin Rubaiyah. Possibly three hundred men altogether. Habitat: Jebel Kaiyah–Dheid and Dhank-Aflaj.

3. Beni Kaab. Ghafiri and Sunni. Sheikh Obeid bin Juma. Live in Mahdah area.

4. Al Naim. Ghafiri and Wahabi. Trucial Coast and Oman. Two main sections: Al bu Kharaiban and Al bu Shamis; the latter may be treated as a separate tribe. Ruler, Saqr bin Sultan of Bireimi. The Al bu Kharaiban live at Bireimi, Dhank Wadi, Ajman, on the Dharirah plain, and at the end of the Wadi Jizzi. The ruler of Ajman is a prominent personage in the tribe, but holds

no official position outside his coastal town. His territory is extremely limited. The Al Khuwata near Ras al-Kheima are a sub-section.

5. Al bu Shamis. Ghafiri and Wahabi. Trucial Coast and Oman. (a) Mohammed Salamin bin Rahmah is the most important Sheikh; (b) Mana bin Ali; (c) Rashid bin Hamid al-Shamsi: northern area; (d) Mohammed bin Hamid al-Hiyayi and Hamid bin Selim al-Wahshi: southern area; (e) Hamaid bin Abdul Rahman on Hamriya Island near Ajman but under Sharjah.

The Al bu Shamis group originated farther south in Dheid east of Dubei; were originally Hinawi and are probably of Qahtani or Yemeni origin; are theoretically a main sub-section of the Al Naim. Their habitat is south of Jebel Hafit (55° 45′ E and 24° N) and in scattered places even up to the coast at Hamriya between Ajman and Umm al-Quweim. Form part of the population of several villages, including Bireimi Oasis.

6. A local informant listed the Manasir—who are divided into Al bu Shahr, Al bu Rahma, Al bu Kheil, and Al bu Mendhir—all under Sheikh Hamed bin Said bin Suwid. He divided the Al Naim under Sheikh Saqr bin Sultan into five groups: (a) Al Khuwata under Seif bin Ali and Ali bin Seif; (b) Al bu Shamis under Sheikh Rashid bin Hamid and the Beduin section under Sheikh Mohammed bin Salamin bin Rahmah; (c) Suluf under Sheikh Ahmed al Sulf; (d) some live in Dhank (loc. Thench); and (e) Ajman. Among smaller groups are the following: (a) Tenej at Rams under Sheikh Seif bin Abdul Rahman; (b) Awanat at Khut under Sheikh Rashid bin Alai, 50-60 men; (c) Sherjin (Sharqiyin), hill tribe plus Bedu under Sheikh Mohammed bin Hamed Sherki; (d) Khabbus in the foothills of Ras al-Kheima, 50-60 men; (e) Beni Zaab on an island off Ras al-Kheima under Sheikh Abdullah bin Hassan, 500 men; (f) Al bu Shamis on Hamriya Island under Sheikh Hamid bin Abdul Rahman; and (g) Umm al Guwain under Ahmed bin Rashid al Ali, the ruling family.

Tribes of Oman Proper—The following live in the area between the desert and the mountains:

1. Al Awamir. Hinawi, Sunni, and Ibadhi, mixed. Sheikh Salim bin Hamid bin Rikadh. Live in Nazwah area.

2. Al Baluch. Hinawi, Sunni.

3. Al Dain. Ghafiri, Sunni, and Ibadhi. Middle south.

4. Al Janabah. Ghafiri, Sunni. Extreme south near Masirah and in Wadi Ardam.

5. Al Harasir. Hinawi, Sunni. Southwestern edge of the Rub' al Khali.

6. Al Wahibi. Hinawi, Ibadhi. Central south and Wadi Ardam.

Mountain Tribes—The following are mainly Ibadhi: 1. Beni Kalban: Gha-

firi; 2. Beni Ali: Hinawi, Sheikh Seif bin Amir; 3. Beni Zaid: Ghafiri; 4. Beni Gaith; 5. Shawamis of Wadi Jizzi (*NB:* not Al bu Shamis); 6. Beni Ghafiri: Hinawi; 7. Maqalil on Batineh side: Ghafiri; 8. Beni Riyan: Hinawi; 9. Sharqiyah: Hinawi; 10. Hawasinah: Hinawi.

SUMMARY[30]

Many new Palaeolithic surface stations were located in Syria, western Iraq, and northern Saudi Arabia, adding links to the range and distribution of Stone Age cultures from southwest Sinai to the Caucasus and from the Black Sea to the southern perimeter of the Arabian Peninsula. Evidence of the existence of ancient man was found in rockshelters near Khurrumabad in central Luristan. Stone implements, probably Neolithic, were collected on Jebel Gurain on the boundary between Kuwait and the Neutral Zone. Trial trenches, revealing the earliest historical cultures, were sunk in two caves on Jebel Baradost, northeastern Iraq.

Anthropometric data were recorded on 533 Assyrians, 126 Assyrian women, 41 Nippur workmen in Iraq; 50 Kurds, 70 Lurs, and 150 Bakhtiari tribesmen in Persia (Iran); and 45 Beharna, the aboriginal inhabitants of Bahrain Island.

The botanical and zoölogical specimens are now being studied at Harvard.

WASHINGTON, D. C.

30 Special permits and facilities were granted to the Expedition: in Lebanon through Dr Charles Malik; in Syria through Dr Faiz el-Khouri; in Iraq through Mr Abdullah Bakr and Dr Naji el-Asil; in Iran through Ambassador Hussein Ala, the late General Razmara, and Mr André Godard, Director of Antiquities. Our desert survey in Syria, western Iraq, Qatar, and along the Trucial Oman Coast was made possible through the generous assistance of the Iraq Petroleum Company, especially of Brigadier S. H. Longrigg, Mr Herridge and Mr Kinch. Through the courtesy of Marshal of the Royal Air Force Sir John Slessor, I was allowed to record anthropometric data at Habbaniya in Iraq and to travel by R. A. F. plane from Bahrain to Sharja. Through Assistant Secretary of State George C. McGhee special assistance was rendered by the following U. S. Chiefs of Mission: Lowell Pinkerton (Lebanon), James Keeley (Syria), Edward Crocker (Iraq), and John Wiley (Iran).

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